

AD-A190 446

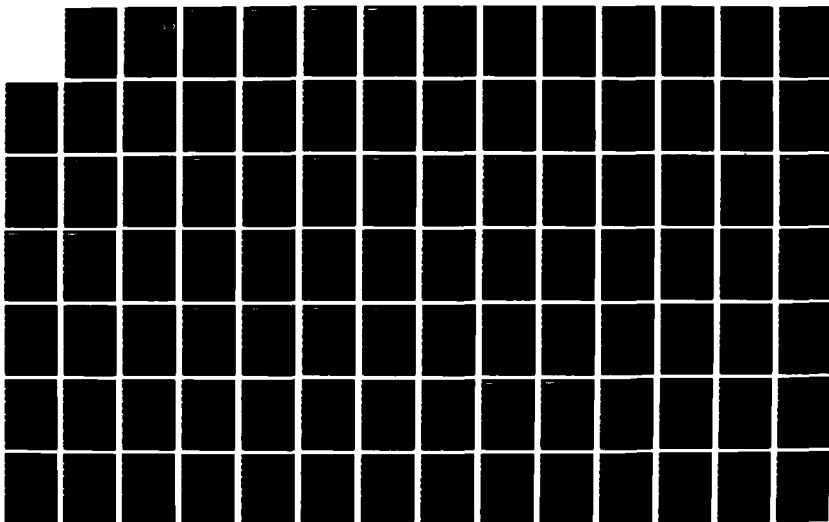
INSTALLATION RESTORATION PROGRAM PHASE 2
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4001

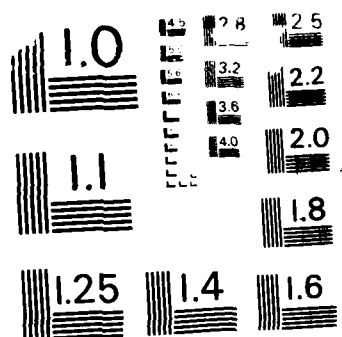
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INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE 1

FINAL REPORT
FOR
AIR FORCE PLANT 4
FORT WORTH, TEXAS

VOLUME 6. APPENDIX A-2 (CONTINUED)

HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION
FACILITIES MANAGEMENT DIVISION (ASD/PMDA)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-6503

AND

HEADQUARTERS, AIR FORCE SYSTEMS COMMAND
COMMAND BIOENVIRONMENTAL ENGINEER (AFSC/SGPB)
ANDREWS AIR FORCE BASE, DC 20334-5000

DECEMBER 1987

PREPARED BY
RADIAN CORPORATION
8501 MO-PAC BOULEVARD
POST OFFICE BOX 201088
AUSTIN, TEXAS 78720-1088

USAF CONTRACT NO. F33615-83-D-4001 DELIVERY ORDER 27
RADIAN CONTRACT NO. 212-027-27

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

USAF OEHL TECHNICAL PROGRAM MANAGERS
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UNITED STATES AIR FORCE
OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAF OEHL)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

DTIC
SELECTED
FEB 04 1988
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AD-A190 446

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NOTICE

This report has been prepared for the United States Air Force by Radian Corporation, for the purpose of aiding in the implementation of the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force, nor the Department of Defense.

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By	
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Dist	Special
A-1	

APPENDIX A-2 (Continued)

Water Quality Assurance/Quality Control Data

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CHROME 860167, TRIP BLANK

RADIAN
CORPORATION

XYLENE: 860168

METHYL METHYL KETONE: 860168

EPA 601 860164, 860165, 860166, 860167

EPA 602 860164, 860165, 860166, 860167

Company Sampled/Address GENERAL DYNAMICS - FT. WORTH DIVISION - PLANT 4

Sample Point Description GROUNDWATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name WENDY JOHNSON Date/Time Sampled 2-14-86

Amount of Sample Collected (2) 100ml, (4) 1qt. mason, 2 (3) 500ml. plastic

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☐ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RADIAN

Received By _____ Date Received _____ Time _____

Transported By WENDY JOHNSON Lab Sample No. 86-02-100

Comments _____

Inclusive Dates of Possession _____

Organization Name PAW

Received By PAW Date Received 2-15-86 Time _____

Transported By PAW Lab Sample No. 3602100

Comments 2-17-86: SPECIES: 2 WAS TO GC LAB, PK. 1

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

For work orders:

ICP QC DATA-PLANT 4

86-02-100
86-02-120
86-02-139
86-02-159

Form II - pg 1

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. PLANT 4

SOW NO. _____

DATE 3-31-86

UNITS µg/l

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.99	99	0.98	98	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	1.01	101	1.00	100	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	1.01	101	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.99	99	1.00	0.99	99	0.99	99	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____

² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin: 80-120; All Other Compounds: 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders

86-02-100

86-02-120

86-02-139

86-02-159

Form II pg 2

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS ug/ml

Compound Initial Calib.¹ Continuing Calibration²

Metals:	True Value	Found	LR	True Value	Found	LR	Found	LR	Method ⁴
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.03	103			P
7. Calcium									
8. Chromium				1.00	1.02	102			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin: 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

For work orders

86-02-100

86-02-120

86-02-129

86-02-159

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS µg/ml

Matrix Water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	0.003*	0.003*	<.001			
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002			
7. Calcium							
8. Chromium	<.005	<.005	0.006*	<.005			
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.016	0.014	<.002			
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% cal

samples 01, 04, 06 (oil and grease)

UNITS

mg/ml

Plant 4 86-02-100

QC DATA - AA, oil and grease

ELEMENT	ANALYSIS DATE	QC DATA		DUPLICATE ANALYSIS				SPIKE RECOVERY					BLANKS	
		FOUND VALUE	TRUE VALUE	%R	SAMP#	DUPL	RPD	SAMP#	SSR	SR	SA	%R		
As	2-24-86													
	idl=.002	0.036	0.040	90	andup 100-02A	<.002	NC	an sp 100-02A	0.029	<.002	.024	96	cal bl <.002	
		0.036	0.040	90	dig dup 100-02A	* 0.006	15	dig sp 100-04A	0.017	<.002	0.020	85	prepb1 <.002	
		0.037	0.040	93									cal bl <.002	
Pb	2-21-86													
	idl=.002	0.042	0.043	98	dig dup 100-02A	0.008	22	dig sp 100-04A	0.014	0.004	0.020	50	dig bl 0.002	
		0.043	0.043	100				an sp 100-04A	0.019	0.004	0.024	63	cal bl <.002	
								an sp 1:10 dilution 100-04A	* 0.026	0.004	0.024	92		
Hg	2-20-86													
	idl=.0002	0.0042	0.0040	105				dig sp 100-04A	0.017	<.0002	0.020	85	dig bl <.0002	
Se	2-21-86													
	idl=.002	0.041	0.040	103	dig dup 100-02A	<.002	NC	dig sp 100-04A	<.002	<.002	0.010	0	dig bl <.002	
		0.043	0.040	108				an sp 100-02A	0.016	<.002	0.024	67	cal bl <.002	
								an sp 1:10 dilution 100-02A	0.025	<.002	0.024	104		
oil and grease	3-14-86	191	200	96										
	idl=1													

an dup=analytical duplicate an sp=analytical spike dig dup=pre-digest duplicate dig sp=pre-digest spike
idl = instrument detection limit *value is less than five times the instrument detection limit NC=not calculable

8602120

PLANT 4

QC DATA - 11, 12, 13

UNITS ug/ml

ELEMENT	ANALYSIS DATE	QC DATA			DUPLICATE ANALYSIS				SPIKE RECOVERY				BLANKS
		FOUND VALUE	TRUE VALUE	%R	SAMP#	DUPL	RPD	SAMP#	SR	SSR	SA	%R	
Hg	2-24-86	0.0048	0.0050	96	orig dup -05E	<.0002	NC	orig spk. -05E	<.0002	0.0019	0.030	95	P <.0002
	10L : .0002	0.0040	0.0040	100									
Pb	3-7-86	0.043	0.043	100				orig spk. -01E	<.0011	0.025	0.035	100	P <.0011
	10L : .0011	0.043	0.043	100									C <.0011
Se	3-7-86	0.034	0.040	85				orig spk. -01E	<.0033	0.013	0.035	52	P <.0033
	10L : .0033	0.036	0.040	90				* -01E	<.0033	0.019	0.025	76	C <.0033
OAs	3-10-86	0.038	0.040	95	orig dup -01E	<.0003	NC	orig spk. -01E	<.0003	0.025	0.024	104	P <.0003
	10L : .0003	0.044	0.040	110									
O+G	3-14-86	191	200	96									
	10L : 1												

$$RPD = [((S-D)/((S+D)/2))] \times 100$$

RPD = relative percent difference

$$SPIKE \%R = [(SSR - SR) / SA] \times 100$$

* Sample diluted 1010 and re-spiked, due to low initial recovery.

P = Prep blank
C = Calibration blank

PLANT 4

[illegible]

an dup=analytical duplicate an sp=analytical spike dig dup=pre-digest duplicate dig sp=pre-digest spike
idl = instrument detection limit *value is less then five times the instrument detection limit NC=not calculable

QC DATA - AT data, oil and Grease UNITS $\mu\text{g/ml}$

Plant 4 86-02-139 samples 01-08 (metals)

ELEMENT	ANALYSIS DATE	QC DATA			DUPLICATE ANALYSIS				SPIKE RECOVERY				BLANKS
		FOUND VALUE	TRUE VALUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SR	SSR	SA	%R
As	3-10-86												
	idl=.003	.038	.040	95	an dup 139-01A	.015	.014*	6.9	an sp 139-01A	.015	.040	.024	104
		.044	.040	110	an dup 139-02A	.003	.004*	3.9	an sp 139-01A	.015	.030	.030	84
		.046	.040	115									
Hg		.040	.040	100									
	3-6-86	.0050	.0050	100	an dup 139-08A	<.0003	<.0002	NC	an sp 139-08A	<.0003	.0018	.0030	90
	idl=.0002	.0042	.0040	105									
		.0040	.0040	100									
Pb	3-7-86	.043	.043	100	an dup 139-02A	<.001	<.001	NC	an sp 139-08A	<.001	.031	.034	7.8
	idl=.001	.041	.043	95	an dup 139-08A	<.001	<.001	NC					
Pb	3-9-86	.041	.043	95	an dup 139-02A	.030	.031	3.3	an sp 139-01A	.014	.037	.030	6.5
	idl=.003	.040	.043	93									
Se	3-9-86	.050	.050	100	an dup 139-02A	<.002	<.003	NC	an sp 139-01A	<.003	<.002	.010	0
	idl=.002	.049	.050	98					an sp 139-03A	<.003	.013	.024	5.1
									an sp 139-03A	<.003	.023	.024	93

an dup=analytical duplicate an sp=analytical spike dig dup=pre-digest duplicate dig sp=pre-digest spike
idl = instrument detection limit *value is less than five times the instrument detection limit NC=not calculable

[illegible][illegible]

Report 4

UNITS ug/ml

Radiac Workorder 8602159 Plant 4 QC DATA- AA

ELEMENT	ANALYSIS DATE	QC DATA		DUPLICATE ANALYSIS				SPIKE RECOVERY				BLANKS		
		FOUND VALUE	TRUE VALUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SR	SSR		SA	%R
Hg	3-7-86	.023	.25	92										<.0002
	IDL .0012	.023	.25	92										<.0002
		.20	.25	80										
Pb	3-12-86	.047	.0415	104	.01*	.005	.006	.75	.01*	.030	.005	.024	102	* <.002
	IDL .002	.048	.045	107										
		.050	.045	111										
Se	3-13-86	.047	.050	94					.05*	<.002	<.003	.024	0	* <.003
	IDL .003	.043	.050	86					.05(.00)	.015	<.003	.024	103	* <.003
6		.045	.050	90										<.003
010														
a2	3-17-86	.028	.037	104					.01*	.036	.005	.024	98	* <.002
	IDL .002	.042	.040	105										* <.002
		.042	.040	105										* <.002

RPD=[(S-D)/((S+D)/2)]x100
 RPD=relative percent difference
 SPIKE %R=[(SSR-SR)/SA]x100
 * analytical
 ** the digestion

for work order 86-02-100

analytical duplicate of 86-02-100-02A

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-100-02A

Units µg/ml

Matrix Water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.068	0.070	2.9
5. Beryllium				
6. Cadmium		< 0.02	< 0.02	NC
7. Calcium				
8. Chromium		< 0.05	< 0.05	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		< 0.02	0.002*	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5% idl

pre digestion dup. of 86-02-100-02A

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-100-02A

Units µg/ml

Matrix Water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.068	0.068	0
5. Beryllium				
6. Cadmium		<.002	<.002	NC
7. Calcium				
8. Chromium		<.005	<.005	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		<.002	0.004 *	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [|S - D| / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5xIDL

FOR WORK ORDER 86-02-100

pre-spike, 86-02-100-03A

Form V

Q. C. Report No. 4

SPIKE SAMPLE RECOVERY

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.
Lab Sample ID No. 86-02-100-03A
Units ug/lal

Matrix Water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.60	0.017	2.00	79
5. Beryllium	-				
6. Cadmium	-	0.028	0.002	0.050	56
7. Calcium	-				
8. Chromium	-	0.16	0.008	0.80	76
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.19	0.007	0.85	73
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicator value is less than 5x idl

For work order

86-02-100

Form III

Q. C. Report No. 4

BLANKS

LAB NAME RadianCASE NO. PLANT 4DATE 3-31-86UNITS µg/mlMatrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						0.003*	
5. Beryllium							
6. Cadmium						<.002	
7. Calcium							
8. Chromium						<.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						<.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% (d)

8602100-02-07

Volatile Organics

DETECTION LIMITS

METHOD 601

METHOD
DETECTION
LIMIT
µg/l

COMPOUND	-07 -02,03	-04	-05
Chloromethane	0.08	8.0	0.4
Bromomethane	1.18	118	5.9
Vinyl Chloride	0.18	18	0.9
Chloroethane	0.52	52	2.6
Methylene Chloride	0.25	25	1.25
Trichlorofluoromethane	0.10	10	0.5
1,1-Dichloroethene	0.13	13	0.65
1,1-Dichloroethane	0.07	7.0	0.35
Trans-1,2-Dichloroethene	0.10	10	0.5
Chloroform	0.05	5.0	0.25
1,2-Dichloroethane	0.03	3.0	0.15
1,1,1-Trichloroethane	0.03	3.0	0.15
Carbon Tetrachloride	0.12	12	0.6
Bromodichloromethane	0.10	10	0.5
1,2-Dichloropropane	0.04	4.0	0.2
Trichloroethene	0.12	12	0.6
Dibromochloromethane	0.09	9.0	0.45
2-Chloroethylvinyl Ether	0.13	13	0.65
Bromoform	0.20	20	1.0
Tetrachloroethene	0.03	3.0	0.15
Chlorobenzene	0.25	25	1.25
1,3-Dichlorobenzene	0.32	32	1.6
1,2-Dichlorobenzene	0.15	15	0.75
1,4-Dichlorobenzene	0.24	24	1.2

8002100-02-07

DETECTION LIMITS

VOLATILE ORGANICS

METHOD C002

COMPOUND	DETECTION LIMIT $\mu\text{g/l}$				
	02-03 02-07	04	06		
BENZENE	0.2	20	—		
TOLUENE	0.2	20	—		
ETHYLBENZENE	0.2	20	—		
CHLOROBENZENE	0.2	20	—		
1,4-DICHLOROBENZENE	0.3	30	—		
1,3-DICHLOROBENZENE	0.4	40	—		
1,2-DICHLOROBENZENE	0.4	40	—		
p-xylene	—	—	0.2		
m-xylene	—	—	0.2		
o-xylene	—	—	0.2		

VOA RESULTS

LAB # _____		SYST Bunk	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 2/7/86 ANALYST: JSC INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	ND	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>		SURROGATE RECOVERIES:	
<u>Bromodichlormethane</u>		601	
<u>1,2-Dichloropropane</u>		Bromochloromethane	_____
<u>Trans-1,3-Dichloropropene</u>		2-Bromo-1-Chloropropane	_____
<u>Trichloroethene</u>		1,4-Dichlorobutane	_____
<u>Dibromochloromethane</u>		602	
<u>1,1,2-Trichlorethane</u>		a,a,a,-Trifluorotoluene	_____
<u>cis-1,3-Dichloropropene</u>			
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylenes</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>URGENT BULK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>2/19/86</u>	EPA METHOD 602
		ANALYST: <u>C</u>	DATE: _____
		INSTRUMENT: <u>Dumas</u>	ANALYST: _____
			INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>ND</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

[illegible]

VOA RESULTS

LAB # <u>16809T QANIL</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/17/21 ANALYST: C. INSTRUMENT: J.
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			
		SURROGATE RECOVERIES:	
		601	
		Bromochloromethane	
		2-Bromo-1-Chloropropane	
		1,4-Dichlorobutane	
		602	
		a,a,a,-Trifluorotoluene	

DAILY QUALITY CONTROL

EPA 82 WP 483 conc 2 + EPA 82 WP 781 conc 3

2/17/86

	CERTIFIED VALUE (ug/L)	ANALYZED VALUE	Q ₁₀₀
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	10.3	112
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	7.1	71
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	64.3	150
1,2-Dichloroethane	27.6	26.2	95
1,1,1-Trichloroethane	14.3	15.1	109
Carbon tetrachloride	20.0	13.4	62
Bromodichloromethane	7.9	8.8	111
1,2-Dichloropropane	8.0	3.6	45
Trichloroethene	22.2	23.8	107
Dibromochloromethane	16.7	14.6	87
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	10.2	103
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	9.1	111
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 2/17/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			Z RECOVERY		
INSTRUMENT			D			D		
ANALYST			e			e		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	35.2			115		
	Toluene	4.1	4.9			119		
	Ethylbenzene	11.5	11.9			103		
	P-Xylene	19.1	20.7			109		
	M-Xylene	42.6	43.6			114		
	O-Xylene	10.6	8.8			83		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DUPLICATE ANALYSIS

800167

EPA METHOD 602

VOLATILE ORGANICS

SAMPLE # 8002100-05D

UNITS ug/l

COMPOUND	RUN#1	RUN#2	RPD
Benzene			
Toluene	0.83	0.76	8.8
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND <i>ug/l</i>	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
* trans-1,2-Dichloroethene	2045	1888	8.0			
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene	2367	2201	7.3			
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

*- did not confirm

SURROGATE RECOVERIES

LAB #: 8602100-02B

SAMPLE ID: 860104

DATE: 2-17-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 109%

2-BROMO-1-CHLOROPROPANE: 103%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602100-03B

SAMPLE ID: 860165

DATE: 2-17-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 109%

2-BROMO-1-CHLOROPROPANE: 110%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602100-04D

SAMPLE ID: 860166

DATE: 2-17-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 101%, 109%

2-BROMO-1-CHLOROPROPANE: 118%, 137%

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602100-05B

SAMPLE ID: 860167

DATE: 2-17-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 99%

2-BROMO-1-CHLOROPROPANE: 113%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8002100-07A

SAMPLE ID: TRIP BLANK

DATE: 2-17-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 113%

2-BROMO-1-CHLOROPROPANE: 109%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602100-02D

SAMPLE ID: 8600164

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 111%

SURROGATE RECOVERIES

LAB #: 8602100-03D

SAMPLE ID: 8600165

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 115%

SURROGATE RECOVERIES

LAB #: 8602100-04F

SAMPLE ID: 86011010

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 114%

SURROGATE RECOVERIES

LAB #: 8602100-05D

SAMPLE ID: 860167

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 119%, 111%

SURROGATE RECOVERIES

LAB #: 8602100-00B

SAMPLE ID: 8601108

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 108%

SURROGATE RECOVERIES

LAB #: 8602100-07A

SAMPLE ID: TRIP BLANK

DATE: 2-17-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 107%

RADIAN
CORPORATION

SALTO.

EPA 625: 860164, 860165, 860166

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics - Fort Worth, Plant 4

Sample Point Description Ground Water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Arthur Morrill Date/Time Sampled 2-14-86

Amount of Sample Collected Six 1000 ml Amber Glass

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 7°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin Irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☒ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By Arthur Morrill Date Received _____ Time _____

Transported By Arthur Morrill Lab Sample No. 86-02-109

Comments _____

Inclusive Dates of Possession 2-14-86

Organization Name Radian Analytical Services

Received By S. J. Murray Date Received 2-18-86 Time 11:05

Transported By Federal Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

6 036

RADIAN
CORPORATION

AUSTIN

EPA 001 860172, 860169

METALS 860172, 860169

EPA 002 860172, 860169

OIL-GREASE 860174, 860169, 860172

CHAIN OF CUSTODY RECORD

HCFUELS 860174, 860169, 860172

CHROMIUM 860169, 860172

Field Sample No. _____

Company Sampled/Address General Dynamics - Ft. Worth, Plant 4

Sample Point Description Ground Water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. Johnson Date/Time Sampled 2-18-86

Amount of Sample Collected 5.4 MASON JARS, FOUR 500 ml plastic, 8 VOA'S

Sample Description Ground Water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By W. Johnson Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 2-18-86

Organization Name RAS

Received By Justin Kelly Date Received 2-18-86 Time 1:00

Transported By Justin Kelly Lab Sample No. 3003113

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

EPA 601: 820170, 820171

EPA 602: 820170, 820171

XYLENE 820173

METHYLENE CHLORIDE 820173

CHAIN OF CUSTODY RECORD

OIL & GREASE 820173, 820170, 820171

HEAVY METALS: 820170, 820171

CHROMIUM 820170, 820171

METALS 820170, 820171

Field Sample No. _____

Company Sampled/Address

Sample Point Description

Stream Characteristics:

Temperature _____

Flow _____

pH _____

Visual Observations/Comments _____

Collector's Name

Date/Time Sampled

Amount of Sample Collected

Sample Description

Store at: ☐ Ambient

☐ 5°C

☐ -10°C

☒ Other

4°C

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³LAB NAME Radian Corp.CASE NO. Plant 4SCN NO. 8608113A. DATE 4-23-86UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	1.04	104	1.0	1.06	106			P
5. Beryllium									
6. Cadmium	1.0	1.04	104	1.0	1.04	104			P
7. Calcium									
8. Chromium	1.0	1.05	105	1.0	1.05	105			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	0.774	77	1.0	0.771	77			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____² Continuing Calibration Source _____³ Control Limits: Mercury and Tin: 80-120; All Other Compounds: 90-110⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Radian Corp
A. DATE 4-23-86CASE NO. 8503113
UNITS ug/mg

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	*0.001	*0.003				*0.002	
5. Beryllium							
6. Cadmium	<0.002	<0.002				<0.002	
7. Calcium							
8. Chromium	*0.008	*0.011				0.042	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	0.012	0.013				<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* - < 5 x 2 IDL

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME Radian CorpCASE NO. 8602113A. DATE 4-23-86~~SPR Sample No.~~ predomantLab Sample ID No. -03Units ug/ml

Matrix _____

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	XR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.9	0.063	2.0	92
5. Beryllium	-				
6. Cadmium	-	0.03	<0.002	0.05	60
7. Calcium	-				
8. Chromium	-	0.14	<0.005	0.2	70
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.21	*0.002	0.35	84
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ XR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * - L5X1 IX

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME Radian Corp.A. DATE 4-23-86CASE NO. 86002113
SMA Sample No. anal
Lab Sample ID No. -04
Units ug/ml

Matrix _____

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	TR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.01	0.043	1.0	97
5. Beryllium	-				
6. Cadmium	-	0.89	<0.008	1.0	89
7. Calcium	-				
8. Chromium	-	0.89	<0.005	1.0	89
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.76	*0.004	1.0	76
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ TR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * - 25% IDL

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME Radian Corp.

A. DATE 4-23-86

CASE NO. 8603113
 EPA Sample No. Production
 Lab Sample ID No. -08
 Units ug/ml

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.066	0.068	3.0
5. Beryllium				
6. Cadmium		<0.002	<0.002	NC
7. Calcium				
8. Chromium		<0.005	<0.005	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.011	*0.005	75 1.
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* ~~See~~ Control LSK's IOL

To be added at a later date.

$$^2 \text{ RPD} = \frac{[(S - D) - (S - D) / 2]}{D} \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

1. RPD should not be considered since there are values < 5x the IOL present in the calculations.

UNITS *mg/g soil*

Plant 4 *56 12-113 samples 11-14/m. (a's) 11-16 (110)*

ELEMENT	ANALYSIS DATE	QC DATA			DUPLICATE ANALYSIS				SPIKE RECOVERY					BLANKS
		FOUND VALUE	TRUE VALUE	%R	SAMP#	DUPL	RPD	SAMP#	SR	SSR	SA	%R		
Cd	2-21-86	.036	.040	90	an dup 113 016	<.002		an sp 113 016	<.002	.024	.024	100	sp bl <.002	
	id1 = .003	.037	.040	93	dig dup 113 016	<.002	N/C	an sp 113 029	<.002	.015	.020	90	sp bl <.002	
		.037	.040	93									an sp <.002	
		.038	.040	95									sp bl <.002	
Pb	3-24-86													
	id1 = .0002	.00418	.0050	96				an sp 113 040	<.002	.020	.020	100	an sp <.002	
		.0040	.0040	100									an sp <.002	
	2-21-86				dig dup 113 016	<.002	N/C	an sp 113 029	<.002	.012	.020	60	an sp <.002	
6044		.043	.043	100				an sp 113 040	<.002	.012	.024	50	an sp <.002	
		.043	.043	100				an sp 113 040	<.002	.020	.024	100		
	2-21-86													
	id1 = .000	.041	.040	103	dig dup 113 016	<.002	N/C	an sp 113 029	<.002	.012	.010	100	an sp <.002	
6045		.043	.041	103				an sp 113 040	<.002	.012	.024	50	an sp <.002	
		.041	.040	103				an sp 113 040	<.002	.020	.024	100	an sp <.002	
	3-14-86	.091	.090	96									an sp <.002	
	id1 = 1													

an dup=analytical duplicate an sp=analytical spike dig dup=pre-digest duplicate dig sp=pre-digest spike
 id1 = instrument detection limit *=value is less than five times the instrument detection limit NC=not calculable

Volatile Organics

DETECTION LIMITS

Sample #: 8602113

METHOD 601		METHOD	
		DETECTION	
		LIMIT	
COMPOUND	ug/l		
	-01-04		
Chloromethane	0.08		
Bromomethane	1.18		
Vinyl Chloride	0.18		
Chloroethane	0.52		
Methylene Chloride	0.25		
Trichlorofluoromethane	0.10		
1,1-Dichloroethene	0.13		
1,1-Dichloroethane	0.07		
Trans-1,2-Dichloroethene	0.01		
Chloroform	0.05		
1,2-Dichloroethane	0.03		
1,1,1-Trichloroethane	0.03		
Carbon Tetrachloride	0.12		
Bromodichloromethane	0.10		
1,2-Dichloropropane	0.04		
Trichloroethene	0.12		
Dibromochloromethane	0.09		
2-Chloroethylvinyl Ether	0.13		
Bromoform	0.30		
Tetrachloroethene	0.03		
Chlorobenzene	0.25		
1,3-Dichlorobenzene	0.32		
1,2-Dichlorobenzene	0.15		
1,4-Dichlorobenzene	0.24		

DETECTION LIMITS

VOLATILE ORGANICS

METHOD 602

Sample #: 8602113

COMPOUND	-01-04		-05		DETECTION LIMIT					19/12
BENZENE		0.2								
TOLUENE		0.2								
ETHYLBENZENE		0.2								
CHLOROBENZENE		0.2								
1,4-DICHLOROBENZENE		0.3								
1,3-DICHLOROBENZENE		0.4								
1,2-DICHLOROBENZENE		0.4								
P-XYLENE								0.2		
M-XYLENE								0.2		
O-XYLENE								0.2		

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	86 02113 - 02C PART 4 86470				2/20/82 C Shuman			
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	9.3		9.2	101				
Trichlorofluoromethane								
1,1-Dichloroethene	7.0		10.0	70				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	5.1		5.4	95				
Chloroform	64.1		43.0	149				
1,2-Dichloroethane	23.7		22.6	86				
1,1,1-Trichloroethane	14.8		14.3	103				
Carbon Tetrachloride	20.7		20.0	103				
Bromodichloroemethane	9.1		7.9	115				
1,2-Dichloropropane	8.2		8.0	102				
Trichloroethene	23.6		20.2	106				
Dibromochloromethane	13.9		16.7	83				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	11.3		9.9	114				
1,1,2,2-Tetrachlorethane			14.0					
Tetrachlorethylene			6.2					
Chlorobenzene	8.5		8.0	106				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

6 047

DUPLICATE ANALYSIS

EPA METHOD 602
VOLATILE ORGANICS

SAMPLE # 8602113-02E
860170

COMPOUND	mg/l	RUN#1	RUN#2	RPD
Benzene				
Toluene		15.8	ND	NC
Ethyl benzene				
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene				
M-Xylene				
P-Xylene				
Chlorobenzene				

• Did confirm on 2nd column

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

* There was a top layer in the vial that was present in the first water run but not in the second.

RPD = Relative Percent Difference

SURROGATE RECOVERIES

LAB #: 8602113-01C

SAMPLE ID: 860169

DATE: 2-19-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 106%

2-BROMO-1-CHLOROPROPANE: 104%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602113-02C

SAMPLE ID: 860170

DATE: 2-19-86

INSTRUMENT: 4

601/8010

BROMOCHLOROMETHANE: 101%

2-BROMO-1-CHLOROPROPANE: 104%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602113-03C

SAMPLE ID: 860171

DATE: 2-20-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 94%

2-BROMO-1-CHLOROPROPANE: 83%

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602113-04D

SAMPLE ID: 860172

DATE: 2-21-86

INSTRUMENT: 3

601/8010

BROMOCHLOROMETHANE: 119%

2-BROMO-1-CHLOROPROPANE: 106%

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602113-01E

SAMPLE ID: 86016A

DATE: 2-20-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 100%

SURROGATE RECOVERIES

LAB #: 8603113-02E

SAMPLE ID: 860170

DATE: 2-21-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 106%, 107%

SURROGATE RECOVERIES

LAB #: 8002113-03E

SAMPLE ID: 860171

DATE: 2-2-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 101%

SURROGATE RECOVERIES

LAB #: 8602113-04E

SAMPLE ID: 860172

DATE: 2-21-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 102%

SURROGATE RECOVERIES

LAB #: 8602113-05B

SAMPLE ID: 860173

DATE: 2-21-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103%

VOA RESULTS

LAB # _____		SYSTEM Blank	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 2/1/86 ANALYST: JSC INSTRUMENT: Hach	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	<i>No</i>	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloroethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethane</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichloromethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichloroethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachloroethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB #		URGENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 2/21/78 ANALYST: C INSTRUMENT: Germani	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	NP	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloroethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichloroethane</u>		SURROGATE RECOVERIES:	
<u>1,1,1-Trichloroethane</u>		601	
<u>Carbon tetrachloride</u>		Bromochloromethane	
<u>Bromodichlormethane</u>		2-Bromo-1-Chloropropane	
<u>1,2-Dichloropropane</u>		1,4-Dichlorobutane	
<u>Trans-1,3-Dichloropropene</u>		602	
<u>Trichloroethene</u>		a,a,a,-Trifluorotoluene	
<u>Dibromochloromethane</u>			
<u>1,1,2-Trichloroethane</u>			
<u>cis-1,3-Dichloropropene</u>			
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachloroethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>SYG-AW-16</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>2/2/82</u> ANALYST: <u>JSC</u> INSTRUMENT: <u>Dumas</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	<u>N/D</u>	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichloroethene</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloroethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichloromethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichloroethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>15657 Blank</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: <u>2/2/01</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N2</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # <u>ST57a Bunk</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>2/2/84</u> ANALYST: <u>SG</u> INSTRUMENT: <u>Relm</u>	
COMPOUND		COMPOUND	
CONCENTRATION (ug/L)		CONCENTRATION (ug/L)	
Chloromethane		Benzene	ND
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		SURROGATE RECOVERIES: 601 Bromochloromethane _____ 2-Bromo-1-Chloropropane _____ 1,4-Dichlorobutane _____ 602 a,a,a,-Trifluorotoluene _____	
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/21/86 ANALYST: C INSTRUMENT: Delta
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	N/A
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichlorethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601 Bromochloromethane _____
 2-Bromo-1-Chloropropane _____
 1,4-Dichlorobutane _____

602 a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		SYSTEM <u>Basil</u>	
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD	DATE:	EPA METHOD	DATE: <u>2/20/86</u>
601	ANALYST:	602	ANALYST: <u>C</u>
	INSTRUMENT:		INSTRUMENT: <u>nd</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>NS</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,1,2,2-Pentachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	
	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	
	a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2 / 20 / 86 ANALYST: C INSTRUMENT: Del
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>35701 BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>2/15/76</u>	EPA METHOD 602
ANALYST: <u>JSG</u>		ANALYST: _____	ANALYST: _____
INSTRUMENT: <u>Dumas</u>		INSTRUMENT: _____	INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>NO</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	_____
Dibromochloromethane		2-Bromo-1-Chloropropane	_____
1,1,2-Trichloroethane		1,4-Dichlorobutane	_____
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	_____
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		REAGENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 2/19/86 ANALYST: Cc INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

2/21/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	Q ₁₀₀
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.6	93
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.2	82
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	51.2	126
1,2-Dichloroethane	27.6	23.2	84
1,1,1-Trichloroethane	14.3	12.2	85
Carbon tetrachloride	20.0	18.3	92
Bromodichloromethane	7.9	8.9	112
1,2-Dichloropropane	8.0	8.5	106
Trichloroethene	22.2	22.6	102
Dibromochloromethane	16.7	14.5	87
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	8.4	85
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	7.5	92
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE: 2/21/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
		INSTRUMENT		D			D	
		ANALYST		G			G	
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	38.1			124		
	Toluene	4.1	3.9			95		
	Ethylbenzene	11.5	11.5			100		
	P-Xylene	19.1	21.4			112		
	M-Xylene	42.6	57.9			122		
	O-Xylene	10.6	9.0			85		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8	—					

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 5/20/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST			C			C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	37.6			102		
	Toluene	4.1	3.8			94		
	Ethylbenzene	11.5	11.3			98		
	P-Xylene	19.1	20.6			108		
	M-Xylene	42.6	50.8			119		
	O-Xylene	10.6	8.7			82		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL

EPA GC WP 483 conc 2 + EPA GC WP 781 conc 3

2/19/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	Q ₁₀₀
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	10.2	111
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	7.8	78
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	62.6	145
1,2-Dichloroethane	27.6	23.5	85
1,1,1-Trichloroethane	14.3	13.8	96
Carbon tetrachloride	20.0	17.4	87
Bromodichloromethane	7.9	8.5	108
1,2-Dichloropropane	8.0	8.4	105
Trichloroethene	22.2	22.5	101
Dibromochloromethane	16.7	15.0	90
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	9.7	98
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	8.5	104
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

EPA 82 WP 483 conc 2 + EPA 82 WP 781 conc 3

2/20/86

		G	G
	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	% RE
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.2 10.0	82 109
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	7.8	78
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	60.0	140
1,2-Dichloroethane	27.6	24.3	88
1,1,1-Trichloroethane	14.3	14.8	103
Carbon tetrachloride	200	18.0	90
Bromodichloromethane	7.9	9.6	121
1,2-Dichloropropane	8.0	8.6	108
Trichloroethene	22.2	23.7	107
Dibromochloromethane	16.7	16.2	97
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	11.0	111
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	8.4	102
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics, FT. Worth, Plant 4
Sample Point Description General Water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. Johnson Date/Time Sampled 2-18-86

Amount of Sample Collected EIGHT amber glass

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 860211

Comments _____

Inclusive Dates of Possession 2-18-86

Organization Name RA S - Sac

Received By Wanda L. Brown Date Received 2/19/86 Time 10:00

Transported By Fed X Lab Sample No. 8602116

Comments no air bill

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

EPA 601: 820175, 820176, 820178, 820179, 820180
EPA 602: 820175, 820176, 820178, 820179, 820180
HC FUELS 820177, 820179, 820180

EPA 1310 820179

EPA 624 820179

CHAIN OF CUSTODY RECORD

OIL + GREASE: 820179, 820180

METALS: 820175, 820176, 820178, 820179, 820180 Field Sample No. _____

Company Sampled/Address General Dynamics - Ft. Worth, Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name E. Snyder Date/Time Sampled 2-19-82

Amount of Sample Collected 22 VIALS, FIVE mason jars, SIX 500ml plastic

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By E. Snyder Lab Sample No. 82-02-120

Comments _____

Inclusive Dates of Possession 2-19-82

Organization Name RAS

Received By [Signature] Date Received 2-20-82 Time 1000

Transported By [Signature] Lab Sample No. 8202120

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

For work orders
86-02-120
86-02-139

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS µg/ml

Matrix WATER

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						0.004*	
5. Beryllium							
6. Cadmium						<.002	
7. Calcium							
8. Chromium						<.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						<.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% idl

For work orders:

ICP QC DATA-PLANT 4

86-02-100
86-02-120
86-02-139
86-02-159

Form II - pg 1

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. PLANT 4

SOW NO. _____

DATE 3-31-86

UNITS ug/l

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.99	99	0.98	98	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	1.01	101	1.00	100	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	1.01	101	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.99	99	1.00	0.99	99	0.99	99	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin: 80-120; All Other Compounds: 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders

86-02-100

86-02-120

86-02-139

86-02-159

Form II pg 2

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radium

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.03	103			P
7. Calcium									
8. Chromium				1.00	1.02	102			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders

86-02-100

86-02-120

86-02-129

86-02-159

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	0.003*	0.003*	<.001			
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002			
7. Calcium							
8. Chromium	<.005	<.005	0.006*	<.005			
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.016	0.014	<.002			
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% cal

For work order 86-02-120

pre-digest dup of 86-02-120-01E

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-120-01E

Units µg/ml

Matrix Water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.11	0.064	53
5. Beryllium				
6. Cadmium		<.002	<.002	NC
7. Calcium				
8. Chromium		0.010 *	0.013 *	25
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		<.002	0.005 *	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

← Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [|S - D| / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5 x idl

2nd work order 86-02-120

analytical dup of 86-02-120-04E

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-120-04E

Units µg/ml

Matrix water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.092	0.092	0
5. Beryllium				
6. Cadmium		<.002	<.002	NC
7. Calcium				
8. Chromium		0.074	0.076	2.7
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.010 *	0.010 *	0
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5 x idl

For work order 86-02-120

Form V

Q. C. Report No. 4

analytical spike of 86-02-120-

SPIKE SAMPLE RECOVERY

LAB NAME Plant 4CASE NO. Plant 4DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-120-03EUnits µg/mlMatrix water

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	XR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.04	0.11	1.00	93
5. Beryllium	-				
6. Cadmium	-	0.88	<0.002	1.00	88
7. Calcium	-				
8. Chromium	-	0.94	0.021*	1.00	92
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.96	0.006*	1.00	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ XR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5x ial

Volatile Organics

DETECTION LIMITS

Report 4

#81002120

METHOD			METHOD
	DETECTION		
	LIMIT		
COMPOUND	-01-03	-04-05	
Chloromethane	0.08	80	
Bromomethane	1.18	1180	
Vinyl Chloride	0.18	180	
Chloroethane	0.52	520	
Methylene Chloride	0.25	250	
Trichlorofluoromethane	0.10	100	
1,1-Dichloroethene	0.13	130	
1,1-Dichloroethane	0.07	70	
Trans-1,2-Dichloroethene	0.10	100	
Chloroform	0.05	50	
1,2-Dichloroethane	0.03	30	
1,1,1-Trichloroethane	0.03	30	
Carbon Tetrachloride	0.12	120	
Bromodichloromethane	0.10	100	
1,2-Dichloropropane	0.04	40	
Trichloroethene	0.12	120	
Dibromochloromethane	0.09	90	
2-Chloroethylvinyl Ether	0.13	130	
Bromoform	0.20	200	
Tetrachloroethene	0.13	30	
Chlorobenzene	0.25	250	
1,3-Dichlorobenzene	0.32	320	
1,2-Dichlorobenzene	0.15	150	
1,4-Dichlorobenzene	0.24	240	

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

#84009150

COMPOUND	-01-03		-04-05		DETECTION LIMIT				
BENZENE	0.2		200						
TOLUENE	0.2		200						
ETHYLBENZENE	0.2		200						
CHLOROBENZENE	0.2		200						
1,4-DICHLOROBENZENE	0.3		300						
1,3-DICHLOROBENZENE	0.4		400						
1,2-DICHLOROBENZENE	0.4		400						

VOA RESULTS

LAB #		<u>SYSTEM BUNK</u>	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>2/15/86</u> ANALYST: <u>JSG</u> INSTRUMENT: <u>QEL</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>N2</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			
		SURROGATE RECOVERIES:	
		601	
		Bromochloromethane _____	
		2-Bromo-1-Chloropropane _____	
		1,4-Dichlorobutane _____	
		602	
		a,a,a,-Trifluorotoluene _____	

VOA RESULTS

LAB #	
CLIENT NAME	
SAMPLE ID	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:
EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)
COMPOUND	CONCENTRATION (ug/L)
Chloromethane	Benzene
Bromomethane	Toluene
Vinyl Chloride	Ethyl benzene
Chloroethane	Chlorobenzene
Methylene chloride	1,4-Dichlorobenzene
Trichlorofluoromethane	1,3-Dichlorobenzene
1,1-Dichlorethane	1,2-Dichlorobenzene
1,1-Dichlorethane	P-Xylene
Trans-1,2-Dichloroethene	M-Xylene
Chloroform	O-Xylene
1,2-Dichlorethane	
1,1,1-Trichlorethane	
Carbon tetrachloride	
Bromodichlormethane	
1,2-Dichloropropane	
Trans-1,3-Dichloropropene	
Trichloroethene	
Dibromochloromethane	
1,1,2-Trichlorethane	
cis-1,3-Dichloropropene	
2-Chloroethylvinyl ether	
Bromoform	
1,1,2,2-Tetrachlorethane	
Tetrachlorethylene	
Chlorobenzene	
1,3-Dichlorobenzene	
1,2-Dichlorobenzene	
1,4-Dichlorobenzene	

VOA RESULTS

LAB # <u>SYSTEM BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>2/21/86</u>		DATE: _____	
ANALYST: <u>JSC</u>		ANALYST: _____	
INSTRUMENT: <u>Dumas</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>ND</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>URGENT BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>2/2/86</u> ANALYST: <u>C</u> INSTRUMENT: <u>Dumas</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	<u>N/D</u>	<u>Benzene</u>	
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>		SURROGATE RECOVERIES:	
<u>1,2-Dichloropropane</u>		601	
<u>Trans-1,3-Dichloropropene</u>			<u>Bromochloromethane</u> _____
<u>Trichloroethene</u>			<u>2-Bromo-1-Chloropropane</u> _____
<u>Dibromochloromethane</u>			<u>1,4-Dichlorobutane</u> _____
<u>1,1,2-Trichlorethane</u>		602	
<u>cis-1,3-Dichloropropene</u>			<u>a,a,a,-Trifluorotoluene</u> _____
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>SYSTEM BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>5/24/02</u> ANALYST: <u>JSC</u> INSTRUMENT: <u>Fluorine</u>	EPA METHOD 602	DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>NO</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		REAGENT Blank	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 2/24/86 ANALYST: INSTRUMENT: Symanics	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	N/D	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/21/78 ANALYST: JSC INSTRUMENT: JSC
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	No
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>Plumbert Bunk</u>			
CLIENT NAME _____			
SAMPLE ID _____			
-----		-----	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>2/21/21</u> ANALYST: <u>C</u> INSTRUMENT: <u>all</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>NP</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8602120-03A Part 4 860179				2/21/81 C Durham			
COMPOUNDS	SSR	SR	SA	XR	SSR	SR	SA	
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	6.9		9.2	75				
Trichlorofluoromethane	6							
1,1-Dichloroethene	6.1		10.0	61				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	4.7		5.4	86				
Chloroform	50.8	0.46	43.0	117				
1,2-Dichloroethane	22.2		27.6	73				
1,1,1-Trichloroethane	13.2		14.3	92				
Carbon Tetrachloride	15.8		20.0	79				
Bromodichloroemethane	8.0		7.9	101				
1,2-Dichloropropane	7.4		8.0	93				
Trichloroethene	22.1		22.2	91				
Dibromochloromethane	13.8		16.7	82				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	9.7		9.9	98				
1,1,2,2-Tetrachlorethane			10.6					
Tetrachlorethylene			6.2					
Chlorobenzene	7.2		8.2	87				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

6 092

10-A190 446

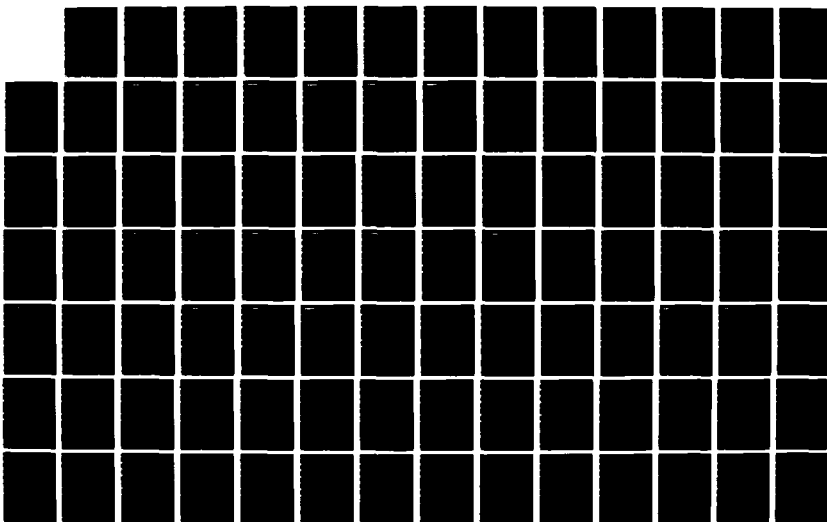
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CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4801

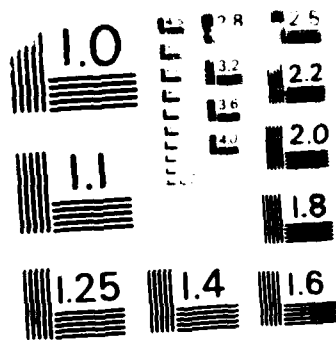
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DUPLICATE ANALYSIS

EPA METHOD 602

VOLATILE ORGANICS

SAMPLE # 8662120-056
(86080)

COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND	ND	ND
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene	ND	ND	ND

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

DUPLICATE ANALYSIS

EPA METHOD 602
VOLATILE ORGANICS

SAMPLE # 8602120-01C
(860175)

COMPOUND	RUN#1	RUN#2	RPD
Benzene			
* Toluene	10.0	0.87	11.8
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

* - There is a top layer that was in the first run but not in the second run.

(8600179)
 86002180-04A

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene	10983	12492	12.9			
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

DAILY QUALITY CONTROL

RAS GC LAB

DATE: <u>2/23/86</u>		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			Z RECOVERY		
INSTRUMENT			D			D		
ANALYST			C			C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
	EPA 602	Benzene	30.7	31.9			104	
Toluene		4.1	3.9			96		
Ethylbenzene		11.5	9.8			86		
P-Xylene		19.1	18.0			94		
M-Xylene		42.6	39.9			94		
O-Xylene		10.6	9.0			85		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

2/24/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	Q ₁₀₀
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	7.5	82
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.2	82
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	54.9	128
1,2-Dichloroethane	27.6	31.4	77
1,1,1-Trichloroethane	14.3	15.3	110
Carbon tetrachloride	20.0	19.8	99
Bromodichloromethane	7.9	8.4	107
1,2-Dichloropropane	8.0	6.3	85
Trichloroethene	22.2	20.3	91
Dibromochloromethane	16.7	15.5	93
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	12.5	127
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	8.0	98
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

2/24/86

	CERTIFIED VALUE (mg/L)	G ANALYZED VALUE	G % REC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.6	93
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.2	82
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	54.2	126
1,2-Dichloroethane	27.6	23.2	84
1,1,1-Trichloroethane	14.3	12.2	85
Carbon tetrachloride	20.0	18.3	92
Bromodichloromethane	7.9	8.9	112
1,2-Dichloropropane	8.0	8.5	106
Trichloroethene	22.2	22.6	102
Dibromochloromethane	16.7	14.5	87
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	8.4	85
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	7.5	92
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 2/21/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST			C			C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	33.1			124		
	Toluene	4.1	3.9			95		
	Ethylbenzene	11.5	11.5			100		
	P-Xylene	19.1	21.4			112		
	M-Xylene	42.6	57.9			122		
	O-Xylene	10.6	9.0			85		
EPA 608		(ug/g)	(ug/g)					
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

SURROGATE RECOVERIES

LAB #: 8602130-01A

SAMPLE ID: 860175

DATE: 2-21-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 108

2-BROMO-1-CHLOROPROPANE: 94

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8000150-03A

SAMPLE ID: 800178

DATE: 2-21-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 112

2-BROMO-1-CHLOROPROPANE: 112

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81002120-C4A

SAMPLE ID: 8100179

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100, 95

2-BROMO-1-CHLOROPROPANE: 117, 118

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602120-05A

SAMPLE ID: 860180

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 99

2-BROMO-1-CHLOROPROPANE: 114

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8002120-01C

SAMPLE ID: 800175

DATE: 2-21-80

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 103, 102

SURROGATE RECOVERIES

LAB #: 86002120-02C

SAMPLE ID: 8600176

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 131

SURROGATE RECOVERIES

LAB #: 8002120-03C

SAMPLE ID: 860178

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 123

SURROGATE RECOVERIES

LAB #: 8602120-040

SAMPLE ID: 860179

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 111

SURROGATE RECOVERIES

LAB #: 86005150-05C

SAMPLE ID: 8600180

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 106, 102

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address GENERAL DYNAMICS, FORT WORTH, PLANT 4
Sample Point Description GROUND WATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name F.R. SNYDER Date/Time Sampled 2/19/86

Amount of Sample Collected (6) Amber Lites

Sample Description GROUND WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RADIAN CORP.

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. 86-02-122

Comments _____

Inclusive Dates of Possession 2/19/86

Organization Name Radian Analytical Services

Received By [Signature] Date Received 2-20-86 Time 09:15

Transported By Federal Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

OIL AND GREASE - 10123, 860120, 860121, 860122, 860123, 860124, 860125
HYDROCARBONS - 10123, 10120, 860121
METALS - 10121, 860120

CHAIN OF CUSTODY RECORD

CHROMIUM - 10120

Field Sample No. _____

Company Sampled/Address General Dynamics - 7-4 Work Plant 4

Sample Point Description Grass (Water)

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Ned Robinson Art Mossell Date/Time Sampled 2-4-86

Amount of Sample Collected EIGHT MASON JARS, THREE 50 ML PLASTIC

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below) ☐ Non-hazardous sample

<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin irritant	<input type="checkbox"/> Flammable (FP < 40°C)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input checked="" type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other _____		

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By Art Mossell Lab Sample No. 86-02-1-3

Comments _____

Inclusive Dates of Possession 2-4-86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

SAC

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics - Ft. Worth Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name N. Johnson Date/Time Sampled 2-20-86

Amount of Sample Collected TEN amber glass

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By N. Johnson Lab Sample No. 86-02-132

Comments _____

Inclusive Dates of Possession 2-20-86

Organization Name Radian Analytical Services

Received By C. Ramsey Date Received 2/21/86 Time 0930

Transported By Federal Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

EPA 601-820186, 820187, 820188, 820189 CHROMIUM:

EPA 602-820186, 820187, 820188, 820189

OIL + GREASE: 820187, 820189

820182

820181

CHAIN OF CUSTODY RECORD

HC FUELS: 820186, 820187, 820189

EPA 1310: 820182

METALS: 820187, 820186, 820189

Field Sample No.

Company Sampled/Address

General Dynamics - Ft. Worth Plant 4

Sample Point Description

Groundwater

Stream Characteristics:

Temperature

Flow

pH

Visual Observations/Comments

Collector's Name

N. Johnson

Date/Time Sampled

2-21-82

Amount of Sample Collected

FIVE mason jars, FOUR 500 ml plastic, SIXTEEN VIALS

Sample Description

Groundwater

Store at:

☐ Ambient

☐ 5°C

☐ -10°C

☒ Other

4°C

☒ Caution - No more sample available

☐ Return unused portion of sample

☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name

Radian Corp

Received By

Date Received

Time

Transported By

N. Johnson

Lab Sample No.

Comments

Inclusive Dates of Possession

2-21-82

Organization Name

RAS

Received By

Mike Tindley

Date Received

2-24-82

Time

0530

Transported By

WJ, FS

Lab Sample No.

46021351

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Volatile Organics

DETECTION LIMITS

#80002135

METHOD COMPOUND	METHOD DETECTION LIMIT		
	-C1-C7	-C8	-C9
Chloromethane	0.08	800	30
Bromomethane	1.18	11800	395
Vinyl Chloride	0.18	1800	45
Chloroethane	0.52	5200	130
Methylene Chloride	0.45	2500	62.5
Trichlorofluoromethane	0.10	1000	25
1,1-Dichloroethene	0.13	1300	32.5
1,1-Dichloroethane	0.07	700	17.5
Trans-1,2-Dichloroethene	0.10	1000	25
Chloroform	0.05	500	12.5
1,2-Dichloroethane	0.03	300	7.5
1,1,1-Trichloroethane	0.03	300	7.5
Carbon Tetrachloride	0.12	1200	30
Bromodichloromethane	0.10	1000	25
1,2-Dichloropropane	0.04	400	100
Trichloroethene	0.12	1200	30
Dibromochloromethane	0.09	900	22.5
2-Chloroethylvinyl Ether	0.13	1300	32.5
Bromoform	0.20	2000	50
Tetrachloroethene	0.03	300	7.5
Chlorobenzene	0.25	2500	62.5
1,3-Dichlorobenzene	0.32	3200	80
1,2-Dichlorobenzene	0.15	1500	37.5
1,4-Dichlorobenzene	0.24	2400	60

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

#8600138

COMPOUND	-01-06 -07-09		-07-09		-08		DETECTION LIMIT			
BENZENE	0.2		2.0		4000					
TOLUENE	0.2		3.0		4000					
ETHYLBENZENE	0.2		2.0		4000					
CHLOROBENZENE	0.2		2.0		4000					
1,4-DICHLOROBENZENE	0.3		3.0		6000					
1,3-DICHLOROBENZENE	0.4		4.0		8000					
1,2-DICHLOROBENZENE	0.4		4.0		5000					

VOA RESULTS

[illegible]

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____		DATE: _____	
EPA METHOD 601		EPA METHOD 602	
DATE: _____		DATE: 2/26/24	
ANALYST: _____		ANALYST: C	
INSTRUMENT: _____		INSTRUMENT: Qel	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	ND
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTEM BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>2/27/98</u> ANALYST: <u>JSC</u> INSTRUMENT: <u>all</u>	
COMPOUND		CONCENTRATION (ug/L)	
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		SURROGATE RECOVERIES: 601 Bromochloromethane _____ 2-Bromo-1-Chloropropane _____ 1,4-Dichlorobutane _____ 602 a,a,a,-Trifluorotoluene _____	
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>11-06897 R/VW</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>2/27/26</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>NL</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/24/71 ANALYST: P.O. INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	NB
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		CLIENT NAME	
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/26/78 ANALYST: C INSTRUMENT: Del
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	ND
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormerthane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylenes			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		STATION NAME	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 2/24/76 ANALYST: JSB INSTRUMENT: Yuma	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<i>ND</i>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			
		SURROGATE RECOVERIES:	
		601	
			Bromochloromethane _____
			2-Bromo-1-Chloropropane _____
			1,4-Dichlorobutane _____
		602	
			a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		110928T BWJL	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 2/24/78 ANALYST: C INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		SYSTA BUNK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 2/25/82 ANALYST: JSC INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane	
Trichloroethene		2-Bromo-1-Chloropropane	
Dibromochloromethane		1,4-Dichlorobutane	
1,1,2-Trichlorethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u> </u>		CLIENT NAME <u> </u>	
SAMPLE ID <u> </u>		DATE: <u> </u>	
EPA METHOD 601		EPA METHOD 602	
ANALYST: <u> </u>		ANALYST: <u> </u>	
INSTRUMENT: <u> </u>		INSTRUMENT: <u> </u>	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u> </u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 2/25/86		SPIKED VALUE (ug/L)	-- ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST			C			C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	31.9			104		
	Toluene	4.1	3.9			96		
	Ethylbenzene	11.5	9.8			86		
	P-Xylene	19.1	18.0			94		
	M-Xylene	42.6	39.9			94		
	O-Xylene	10.6	9.0			85		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

2/24/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	Q ₁₀₀
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	7.5	82
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.2	82
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	54.9	128
1,2-Dichloroethane	27.6	21.4	77
1,1,1-Trichloroethane	14.3	15.8	110
Carbon tetrachloride	20.0	19.8	99
Bromodichloromethane	7.9	8.4	107
1,2-Dichloropropane	8.0	6.3	85
Trichloroethene	22.2	20.3	91
Dibromochloromethane	16.7	15.5	93
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	12.5	127
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	8.0	98
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

G 2/25/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	% REC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.7	95
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	7.9	79
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	58	135
1,2-Dichloroethane	27.6	23	83
1,1,1-Trichloroethane	14.3	16.2	113
Carbon tetrachloride	20.0	20.2	101
Bromodichloromethane	7.9	8.6	108
1,2-Dichloropropane	8.0	7.1	89
Trichloroethene	22.2	21.8	98
Dibromochloromethane	16.7	15.3	92
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	11.4	115
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	7.1	87
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE: 2/26/96		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
		INSTRUMENT		D			D	
		ANALYST		G			G	
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	35.5			115		
	Toluene	4.1	4.4			107		
	Ethylbenzene	11.5	11.8			103		
	P-Xylene	19.1	21.1			111		
	M-Xylene	42.6	49.7			117		
	O-Xylene	10.6	9.0			85		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL
RAS GC LAB

DATE: 2/27/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
		INSTRUMENT	D			D		
		ANALYST						
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	40.5	35.8		132	117	
	Toluene	4.1	4.9	4.6		120	113	
	Ethylbenzene	11.5	13.2	11.9		114	104	
	P-Xylene	19.1	23.3	21.2		122	111	
	M-Xylene	42.6	78.0	52.3		183	123	
	O-Xylene	10.6	9.6	9.0		91	85	
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

SPIKE RECOVERY

EPA Method 602

Volatile Organics

2/26/76
RP
D

SAMPLE # 8602138-0VC

UNITS PARTY 860184
Sam

COMPOUND	SSR	SR	SA	ZR
Benzene	38.0		30.7	124
Toluene	4.9	0.56	4.1	106
Ethyl benzene	12.9		11.5	112
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene	9.2		10.6	87
M-Xylene	78.4		42.6	184
P-Xylene	22.5		19.1	118
Chlorobenzene				

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

RADIAN

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8602138-05A PLANTY 860189 Spc				1:250	2/25/86 RP Sumner			
COMPOUNDS	SSR	SR	SA	ZR		SSR	SR	SA	ZR
Chloromethane									
Bromomethane									
Vinyl chloride									
Chloroethane									
Methylene chloride	7.1		9.2	77					
Trichlorofluoromethane									
1,1-Dichloroethene	6.5		10.0	65					
1,1-Dichloroethane									
trans-1,2-Dichloroethene	5.3		5.4	97					
Chloroform	51.2		43.0	119					
1,2-Dichloroethane	21.2		27.6	77					
1,1,1-Trichloroethane	15.2		14.3	106					
Carbon Tetrachloride	20.2		20.0	101					
Bromodichloroemethane	8.2		7.9	104					
1,2-Dichloropropane	7.5		8.0	94					
Trichloroethene	28.9	5585	22.2	130					
Dibromochloromethane	11.2		16.7	67					
1,1,2-Trichloroethane									
cis-1,2-Dichloropropene									
2-Chlorethylvinyl ether									
Bromoform	10.5		9.9	106					
1,1,2,2-Tetrachloreothane			10.0						
Tetrachlorethylene			6.2						
Chlorobenzene	7.8		8.2	95					
1,3-Dichlorobenzene									
1,2-Dichlorobenzene									
1,4-Dichlorobenzene									

① SAMPLE AMOUNT ALARMY SUBTRACTED OUT.

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

6 131

DUPLICATE ANALYSIS

EPA METHOD 602

VOLATILE ORGANICS

SAMPLE # SLC 9138-C3C

UNITS (SLC 112)

COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND	ND	NC
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

SLC135-05A
 (SLC135)

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane	ND	ND	NC			
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene	7	7	7			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

SURROGATE RECOVERIES

LAB #: 8002138-C1A

SAMPLE ID: 800181

DATE: 2-24-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 88

2-BROMO-1-CHLOROPROPANE: 99

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 3002138-C2A

SAMPLE ID: 300B2

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 93

2-BROMO-1-CHLOROPROPANE: 104

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 30002138-03A

SAMPLE ID: 300133

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100

2-BROMO-1-CHLOROPROPANE: 110

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SUCC-2135-C4A

SAMPLE ID: SUCC184

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 102

2-BROMO-1-CHLOROPROPANE: 108

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SCC2138-C5A

SAMPLE ID: SCC155

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 92, 98

2-BROMO-1-CHLOROPROPANE: 105, 111

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SCC2138-CLWA

SAMPLE ID: SCC186

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: SC

2-BROMO-1-CHLOROPROPANE: CL

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SLC 2138-17A

SAMPLE ID: SLC 2137

DATE: 2-24-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 121

2-BROMO-1-CHLOROPROPANE: 122

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8000138-LSA

SAMPLE ID: 800138

DATE: 2-25-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100

*2-BROMO-1-CHLOROPROPANE: 133

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

* interference involved with the recovery

SURROGATE RECOVERIES

LAB #: SCC0358-14A

SAMPLE ID: SCC0189

DATE: 2-25-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 106

2-BROMO-1-CHLOROPROPANE: 119

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SLC 233-010

SAMPLE ID: SLC 181

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 114

SURROGATE RECOVERIES

LAB #: 8002138-C20

SAMPLE ID: 800182

DATE: 2-25-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 10.4, 10.9

SURROGATE RECOVERIES

LAB #: 8602138-03C

SAMPLE ID: 860183

DATE: 2-26-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103

SURROGATE RECOVERIES

LAB #: 8662135-040.

SAMPLE ID: 866134

DATE: 2-26-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 112

SURROGATE RECOVERIES

LAB #: 8002138-DEC

SAMPLE ID: 800155

DATE: 2-20-80

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 101

SURROGATE RECOVERIES

LAB #: SCC 2135-000A

SAMPLE ID: SCC 186

DATE: 2-21-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 164

SURROGATE RECOVERIES

LAB #: SLC2138-C7C

SAMPLE ID: SLC187

DATE: 2-20-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 111

SURROGATE RECOVERIES

LAB #: 8662158-CSC

SAMPLE ID: 866158

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 48

SURROGATE RECOVERIES

LAB #: 860238-296

SAMPLE ID: 860189

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 97

RADIAN
CORPORATION

AUSTIN

EPA 601: 860181, 860182, 860183, 860184, 860185

EPA 602: 860181, 860182, 860183, 860184, 860185

CHAIN OF CUSTODY RECORD

METALS: 860181, 860182, 860183, 860184, 860185

Field Sample No. _____

Company Sampled/Address Shred Dynamics - Ft Worth Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name N. Johnson Date/Time Sampled 2-20-86

Amount of Sample Collected TWENTY VIALS, FIVE 500ml plastic

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By N. Johnson Lab Sample No. 8602-139

Comments _____

Inclusive Dates of Possession 2-20-86

Organization Name RAS

Received By Mike Hunsley Date Received 2-21-86 Time 1600

Transported By Ed 91 Lab Sample No. 5002133, 139

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

For work orders
86-02-120
86-02-139

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS µg/ml

Matrix WATER

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						0.004*	
5. Beryllium							
6. Cadmium						<.002	
7. Calcium							
8. Chromium						<.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						<.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5 µl/l

For work orders:

ICP QC DATA - PLANT 4

86-02-100
86-02-120
86-02-139
86-02-159

Form II - pg 1

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. PLANT 4

SOW NO. _____

DATE 3-31-86

UNITS ug/l

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.99	99	0.98	98	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	1.01	101	1.00	100	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	1.01	101	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.99	99	1.00	0.99	99	0.99	99	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin: 80-120; All Other Compounds: 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA, F - Furnace

for work orders

86-02-100

86-02-120

86-02-129

86-02-159

Form II pg 2

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.03	103			P
7. Calcium									
8. Chromium				1.00	1.02	102			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

For work orders

86-02-100

86-02-120

86-02-129

86-02-159

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS ug/ml

Matrix Water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	0.003*	0.003*	<.001			
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002			
7. Calcium							
8. Chromium	<.005	<.005	0.006*	<.005			
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.016	0.014	<.002			
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% cal

Gen. Work order 86-02-139

Form V

Q. C. Report No. 4

analytical spike of 86-02-139-08A

SPIKE SAMPLE RECOVERY

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No. _____

Lab Sample ID No. 86-02-139-08A

Units ug/ml

Matrix WATER

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.04	0.10	1.00	94
5. Beryllium	-				
6. Cadmium	-	0.92	<.002	1.00	92
7. Calcium	-				
8. Chromium	-	1.08	0.14	1.00	94
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.96	0.012	1.00	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other: _____					

Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: _____

CHAIN OF CUSTODY RECORD

Field Sample No. 960179

Company Sampled/Address Plant 4

Sample Point Description _____

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name _____ Date/Time Sampled 2-19-86

Amount of Sample Collected 2 VOA

Sample Description perform 624

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By John Murphy Date Received 2-20-86 Time _____

Transported By John W Lab Sample No. 20-02-12

Comments _____

Inclusive Dates of Possession 2-20-86 - 2-24-86

Organization Name RAS - Sac

Received By Vanda Brown Date Received 2/25/86 Time 9:40

Transported By Fred X 736743935 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclu: _____



RADIAN
CORPORATION

SAC

E 1625: 820186, 820188, 820189
EPA 624: 820182 (2)

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics - FA. Work - Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name N. Johnson Date/Time Sampled 2/21/86

Amount of Sample Collected FOUR amber glass, TWO VOAS

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By N. Johnson Lab Sample No. 2-21-86

Comments _____

Inclusive Dates of Possession 2-21-86

Organization Name Radian Corp - Sac

Received By Wanda Brown Date Received 2/25/86 Time 9:40

Transported By Feel X 136743935 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

EPA 601 820190, 820191, 820192, 820193, 820194
EPA 602: 820190, 820191, 820192, 820193, 820194
METALS 820190, 820191, 820192, 820194

CHAIN OF CUSTODY RECORD

FIELD BLANKS: 820194

TRIP BLANK

Field Sample No. _____

Company Sampled/Address General Dynamics - Ft. Worth Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name N. Johnson Date/Time Sampled 2/25/82

Amount of Sample Collected 31 Vials, 4 500ml plastic

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By N. Johnson Lab Sample No. 820194

Comments _____

Inclusive Dates of Possession 2-25-82

Organization Name RAS

Received By [Signature] Date Received 3-30-82 Time 5:30

Transported By [Signature] Lab Sample No. 820194

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

For work orders:

ICP QC DATA - PLANT 4

86-02-100
86-02-120
86-02-139
86-02-159

Form II - pg 1

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. PLANT 4

SOW NO. _____

DATE 3-31-86

UNITS ug/l

Compound	Initial Calib. ¹			Continuing Calibration ²					
Metals: ³	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.99	99	0.98	98	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	1.01	101	1.00	100	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	1.01	101	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.99	99	1.00	0.99	99	0.99	99	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____

² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin: 80-120; All Other Compounds: 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders

86-02-100

86-02-120

86-02-139

86-02-159

Form II p92

Q. C. Report No. 4

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radium

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS ug/ml

Compound

Initial Calib.¹

Continuing Calibration²

Metals:	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method ⁴
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.03	103			P
7. Calcium									
8. Chromium				1.00	1.02	102			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____

² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

For work orders

86-02-100

86-02-120

86-02-129

86-02-159

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. PLANT 4

DATE 3-31-86

UNITS µg/ml

Matrix (water)

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	0.003*	0.003*	<.001			
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002			
7. Calcium							
8. Chromium	<.005	<.005	0.006*	<.005			
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.016	0.014	<.002			
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 5% cal

Final work order 86-02-159

Form V

Q. C. Report No. 4

analytical spike of 86-02-159-a

SPIKE SAMPLE RECOVERY

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-159-05 E

Units ug/ml

Matrix water

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	XR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	"				
3. Arsenic	"				
4. Barium	"	1.06	0.13	1.00	93
5. Beryllium	"				
6. Cadmium	"	0.88	<0.002	1.00	88
7. Calcium	"				
8. Chromium	"	0.92	0.022*	1.00	90
9. Cobalt	"				
10. Copper	"				
11. Iron	"				
12. Lead	"				
13. Magnesium	"				
14. Manganese	"				
15. Mercury	"				
16. Nickel	"				
17. Potassium	"				
18. Selenium	"				
19. Silver	"	0.96	0.004*	1.00	96
20. Sodium	"				
21. Thallium	"				
22. Tin	"				
23. Vanadium	"				
24. Zinc	"				
Other:					
Cyanide	"				

¹ XR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5 x idl

For Work order 86-02-159

Form V

Q. C. Report No. 4

predig spike 86-02-159-02E

SPIKE SAMPLE RECOVERY

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-159-02E

Units µg/ml

Matrix water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.75	0.095	2.00	83
5. Beryllium	-				
6. Cadmium	-	0.036	<0.002	0.050	72
7. Calcium	-				
8. Chromium	-	0.18	0.024*	0.20	78
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.18	0.006*	0.25	70
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5xidl

for work order 86-02-159

analytical dup of 86-02-159-01E

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME Radium

CASE NO. Plant 4

DATE 3-31-86

EPA Sample No.

Lab Sample ID No. 86-02-159-01E

Units ug/ml

Matrix water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.073	0.072	1.4
5. Beryllium				
6. Cadmium		<.002	<.002	NC
7. Calcium				
8. Chromium		<.005	<.005	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.004*	<.002	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

For work order 86-02-159

re-regist dup of 86-02-159-01E

Form VI

Q. C. Report No. 4

DUPLICATES

LAB NAME RadianCASE NO. Plant 4DATE 3-31-86EPA Sample No. _____
Lab Sample ID No. 86-02-159-01E
Units ug/mlMatrix Water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.073	0.075	2.7
5. Beryllium				
6. Cadmium		<.002	<.002	NC
7. Calcium				
8. Chromium		<.005	0.020 *	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.004 *	0.005 *	22
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5x idl

for work order
86-02-159

Form III

Q. C. Report No. 4

BLANKS

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

UNITS µg/ml

Matrix water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						0.004*	
5. Beryllium							
6. Cadmium						<0.002	
7. Calcium							
8. Chromium						0.009*	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						0.010	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* indicates value is less than 54 idl

Volatile Organics

Report 4

DETECTION LIMITS #18602159

METHOD COMPOUND	METHOD DETECTION LIMIT		
	-01-03 -05-07	-02	-04
Chloromethane	0.08	0.8	20
Bromomethane	1.18	11.8	295
Vinyl Chloride	0.18	1.8	45
Chloroethane	0.52	5.2	130
Methylene Chloride	0.25	2.5	62.5
Trichlorofluoromethane	0.10	1.0	25
1,1-Dichloroethene	0.13	1.3	32.5
1,1-Dichloroethane	0.07	0.7	17.5
Trans-1,2-Dichloroethene	0.10	1.0	25
Chloroform	0.05	0.5	12.5
1,2-Dichloroethane	0.03	0.3	7.5
1,1,1-Trichloroethane	0.03	0.3	7.5
Carbon Tetrachloride	0.12	1.2	30
Bromodichloromethane	0.10	1.0	25
1,2-Dichloropropane	0.04	0.4	10
Trichloroethene	0.12	1.2	30
Dibromochloromethane	0.09	0.9	22.5
2-Chloroethylvinyl Ether	0.13	1.3	32.5
Bromoform	0.20	2.0	50
Tetrachloroethene	0.20	2.0	50
Chlorobenzene	0.25	2.5	62.5
1,3-Dichlorobenzene	0.32	3.2	80
1,2-Dichlorobenzene	0.15	1.5	37.5
1,4-Dichlorobenzene	0.24	2.4	60

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

1150009159

COMPOUND	01-103 05-03	04	DETECTION LIMIT					
BENZENE	0.2	10						
TOLUENE	0.2	10						
ETHYLBENZENE	0.2	10						
CHLOROBENZENE	0.2	10						
1,4-DICHLOROBENZENE	0.3	15						
1,3-DICHLOROBENZENE	0.4	20						
1,2-DICHLOROBENZENE	0.4	20						

VOA RESULTS

LAB # _____		SYS OP <u>UNK</u>	
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/27/86 ANALYST: JSK INSTRUMENT: <u>Qel</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 5/27/76 ANALYST: C INSTRUMENT: Del		
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)		
Chloromethane		Benzene			
Bromomethane		Toluene			
Vinyl Chloride		Ethyl benzene			
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichlorethane		1,2-Dichlorobenzene			
1,1-Dichlorethane		P-Xylene			
Trans-1,2-Dichloroethene		M-Xylene			
Chloroform		O-Xylene			
1,2-Dichlorethane					
1,1,1-Trichlorethane					
Carbon tetrachloride					
Bromodichlormethane					
1,2-Dichloropropane					
Trans-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichlorethane					
cis-1,3-Dichloropropene					
2-Chloroethylvinyl ether					
Bromoform					
1,1,2,2-Tetrachlorethane					
Tetrachlorethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					
		SURROGATE RECOVERIES:			
		601			
		Bromochloromethane _____			
		2-Bromo-1-Chloropropane _____			
		1,4-Dichlorobutane _____			
		602			
		a,a,a,-Trifluorotoluene _____			

VOA RESULTS

EPA METHOD 601		DATE: 2/26/91 ANALYST: CP INSTRUMENT: Luma	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	NO	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>URGENT BANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>2/26/86</u>		DATE: _____	
ANALYST: <u>C</u>		ANALYST: _____	
INSTRUMENT: <u>Heumann</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene	0.20		
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601
 Bromochloromethane _____
 2-Bromo-1-Chloropropane _____
 1,4-Dichlorobutane _____

602
 a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD	DATE:	EPA METHOD	DATE:
601		602	3/5/86
ANALYST:	INSTRUMENT:	ANALYST:	INSTRUMENT:
			JS C
			D
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	
	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	
	a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # <u>NEGAT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: _____		DATE: <u>3/5/76</u>	
ANALYST: _____		ANALYST: <u>DMV</u>	
INSTRUMENT: _____		INSTRUMENT: <u>NO. 1</u>	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			
		SURROGATE RECOVERIES:	
		601	
		Bromochloromethane _____	
		2-Bromo-1-Chloropropane _____	
		1,4-Dichlorobutane _____	
		602	
		a,a,a,-Trifluorotoluene _____	

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/5/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC.3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0					
	1,2-Dichloroethane	27.6					
	1,1,1-Trichloroethane	14.3					
	Carbon Tetrachloride	20.0					
	Bromodichloromethane	7.9					
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2					
	Dibromochloromethane	16.7					
	Bromoform	9.9					
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	34.3	112			
	Toluene	4.1	4.5	110			
	Ethylbenzene	11.5	12.3	107			
	P-Xylene	19.1	21.4	112			
	M-Xylene	42.6	50.9	120			
	O-Xylene	10.6	9.1	86			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1250	56.8					

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 2/27/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST								
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
	EPA 602	Benzene	30.7	40.5	35.8		132	117
Toluene		4.1	4.9	4.6		120	113	
Ethylbenzene		11.5	13.2	11.9		114	104	
P-Xylene		19.1	23.3	21.2		122	111	
M-Xylene		42.6	78.0	52.3		183	123	
O-Xylene		10.6	9.6	9.0		91	85	
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL

EPA 82 WP 483 conc 2 + EPA 82 WP 781 conc 3

2/26/86

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	% REC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	9.5	103
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	9.1	91
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	61.7	143
1,2-Dichloroethane	27.6	22.3	81
1,1,1-Trichloroethane	14.3	15.4	108
Carbon tetrachloride	20.0	21.4	107
Bromodichloromethane	7.9	8.8	112
1,2-Dichloropropane	8.0	7.6	95
Trichloroethene	22.2	22.7	102
Dibromochloromethane	16.7	14.2	85
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	9.8	99
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	8.1	99
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DUPLICATE ANALYSIS

EPA METHOD 602

VOLATILE ORGANICS

SAMPLE # 8002159-03C
(8000192)

COMPOUND	RUN#1	RUN#2	RPD
Benzene			
* Toluene	0.84	N.D.	N.C.
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

* - There is a top layer that was in the first run but not in the second.

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachloreothane						
Tetrachlorethylene	6.64	6.69	11.8			
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

SURROGATE RECOVERIES

LAB #: 8602159-C1A

SAMPLE ID: 860190

DATE: 2-20-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 119

2-BROMO-1-CHLOROPROPANE: 118

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8608159-C2A

SAMPLE ID: 860191

DATE: 2-26-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 121

2-BROMO-1-CHLOROPROPANE: 133

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81002159-13A

SAMPLE ID: 8600192

DATE: 8-26-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 105

2-BROMO-1-CHLOROPROPANE: 109

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602159-04A

SAMPLE ID: 860193

DATE: 2-26-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 101

2-BROMO-1-CHLOROPROPANE: 122

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602159-05A

SAMPLE ID: 860194

DATE: 2-26-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 111,99

2-BROMO-1-CHLOROPROPANE: 116,155

602/8020

a,a-a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602159-06A

SAMPLE ID: FIELD BLANK

DATE: 2-26-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 112

2-BROMO-1-CHLOROPROPANE: 118

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 50002159-07A

SAMPLE ID: TRIP BLANK

DATE: 2-20-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 111

2-BROMO-1-CHLOROPROPANE: 174

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

AD-A190 446

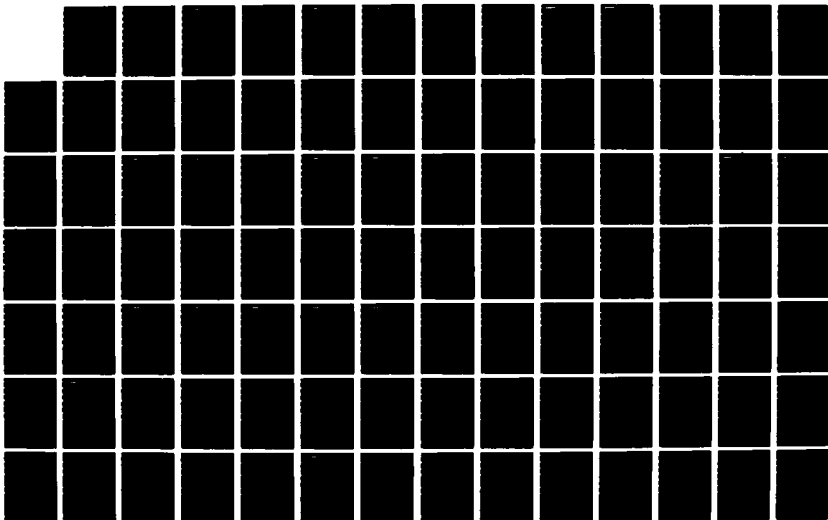
INSTALLATION RESTORATION PROGRAM PHASE 2
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4001

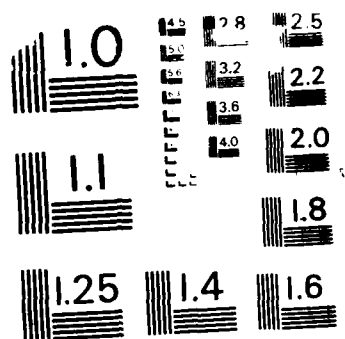
3/6

UNCLASSIFIED

F/G 24/7

ML





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SURROGATE RECOVERIES

LAB #: 8602159-01C

SAMPLE ID: 860190

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 102

SURROGATE RECOVERIES

LAB #: 8602159-02C.

SAMPLE ID: 860191

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 93

SURROGATE RECOVERIES

LAB #: 8609159-030

SAMPLE ID: 860192

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 120, 98

SURROGATE RECOVERIES

LAB #: 8002159-04C

SAMPLE ID: 800193

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 107

SURROGATE RECOVERIES

LAB #: 86008159-05C

SAMPLE ID: 8600194

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 112

SURROGATE RECOVERIES

LAB #: 8002159-010B

SAMPLE ID: FIELD BLANK

DATE: 2-27-80

INSTRUMENT: 0

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 111

SURROGATE RECOVERIES

LAB #: 860159-C7A

SAMPLE ID: TRIP BLANK

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 92

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address GENERAL DYNAMICS, FT. WORTH, PLANT 4

Sample Point Description GROUND WATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. JOHNSON Date/Time Sampled 2/25/86

Amount of Sample Collected 7 Amber liter bottles

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling Hazards _____

860191 - Partial Sample Volume OK

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RADIAN CORP

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 860192-1-9

Comments _____

Inclusive Dates of Possession 2/25/86

Organization Name RAS - Sacto

Received By Wanda Brown Date Received 2/26/86 Time 10:00

Transported By Felix 764773273 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

ALISTIN

MEK: 860199

KYLENE: 860199

EPA 601: 860195, 860196, 860197, 860198, 860199, 860200

EPA 602: 860195, 860196, 860197, 860198, 860199, 860200

HC PULS: 860195, 860196, 860197, 860198, 860199, 860200

CHAIN OF CUSTODY RECORD

OIL + GREASE: 860195, 860196, 860197, 860198, 860199, 860200

METALS + CARBON: 860195, 860196, 860197, 860198, 860199, 860200

Field Sample No.

Company Sampled/Address

Sample Point Description

Stream Characteristics:

Temperature

Flow

pH

Visual Observations/Comments

Collector's Name

Date/Time Sampled

Amount of Sample Collected

Sample Description

Store at:

☐ Ambient

☐ 5°C

☐ -10°C

☒ Other

4°C

☒ Caution - No more sample available

☐ Return unused portion of sample

☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Volatile Organics

Report 3

GC PC
DETECTION LIMITS

8002170

METHOD			METHOD
			DETECTION
			LIMIT
COMPOUND	-01-02 -04-05	-03	
Chloromethane	0.08	0.8	
Bromomethane	1.8	11.8	
Vinyl Chloride	0.18	1.8	
Chloroethane	0.52	5.2	
Methylene Chloride	0.25	2.5	
Trichlorofluoromethane	0.10	1.0	
1,1-Dichloroethene	0.13	1.3	
1,1-Dichloroethane	0.07	0.7	
Trans-1,2-Dichloroethene	0.10	1.0	
Chloroform	0.05	0.5	
1,2-Dichloroethane	0.03	0.3	
1,1,1-Trichloroethane	0.03	0.3	
Carbon Tetrachloride	0.12	1.2	
Bromodichloromethane	0.10	1.0	
1,2-Dichloropropane	0.04	0.4	
Trichloroethene	0.12	1.2	
Dibromochloromethane	0.09	0.9	
2-Chloroethylvinyl Ether	0.13	1.3	
Bromoform	0.80	2.0	
Tetrachloroethene	0.03	0.3	
Chlorobenzene	0.25	2.5	
1,3-Dichlorobenzene	0.32	3.2	
1,2-Dichlorobenzene	0.15	1.5	
1,4-Dichlorobenzene	0.24	2.4	

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

91800816

COMPOUND	DETECTION LIMIT				
	-01-02 -02-03	-03	-06		
BENZENE	0.20	2.0	—		
TOLUENE	0.20	2.0	—		
ETHYLBENZENE	0.20	2.0	—		
CHLOROBENZENE	0.20	2.0	—		
1,4-DICHLOROBENZENE	0.30	3.0	—		
1,3-DICHLOROBENZENE	0.40	4.0	—		
1,2-DICHLOROBENZENE	0.40	4.0	—		
m-XYLENE	—	—	0.2		
p-XYLENE	—	—	0.2		
o-XYLENE	—	—	0.2		

VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>7/7/86</u> ANALYST: <u>JSC</u> INSTRUMENT: <u>Durain</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N/D</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane	
Trichloroethene		2-Bromo-1-Chloropropane	
Dibromochloromethane		1,4-Dichlorobutane	
1,1,2-Trichlorethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID	
EPA METHOD 601	DATE: 2/27/86 ANALYST: C INSTRUMENT: Duran	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:		
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)		
Chloromethane	✓	Benzene			
Bromomethane		Toluene			
Vinyl Chloride		Ethyl benzene			
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichloroethene		1,2-Dichlorobenzene			
1,1-Dichloroethane		P-Xylene			
Trans-1,2-Dichloroethene		M-Xylene			
Chloroform		O-Xylene			
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon tetrachloride					
Bromodichloromethane					
1,2-Dichloropropane		SURROGATE RECOVERIES:			
Trans-1,3-Dichloropropene		601			
Trichloroethene		Bromochloromethane			
Dibromochloromethane		2-Bromo-1-Chloropropane			
1,1,2-Trichloroethane		1,4-Dichlorobutane			
cis-1,3-Dichloropropene		602			
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene			
Bromoform					
1,1,2,2-Tetrachloroethane					
Tetrachlorethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					

VOA RESULTS

LAB # <u>SYSTEM BANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/28/06 ANALYST: JSC INSTRUMENT: 000
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	N ₂
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/20/96 ANALYST: C INSTRUMENT: Qe
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		Benzene	ND
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichlorethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB #		SYSTEM BUNK:	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 2/27/82 ANALYST: JSC INSTRUMENT: QLN
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloerethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloerethane			
1,1,1-Trichloerethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloerethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloerethane			
Tetrachloerethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>MS-001 BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>2/27/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>QEL</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>N/D</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethane		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8602176 - OYA Amory 860158 Sp				2/27/81 R G			
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	7.8		9.2	85				
Trichlorofluoromethane								
1,1-Dichloroethene	6.4		10.0	64				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	5.3		5.4	98				
Chloroform	53.7		43.0	125				
1,2-Dichloroethane	21.1		22.6	76				
1,1,1-Trichloroethane	13.9		14.3	97				
Carbon Tetrachloride	18.5		21.0	92				
Bromodichloroemethane	7.8		7.9	99				
1,2-Dichloropropane	7.7		8.0	96				
Trichloroethene	21.6	0.13	22.2	97				
Dibromochloromethane	14.5		16.7	87				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	9.4		9.9	95				
1,1,2,2-Tetrachlorethane			10.0					
Tetrachlorethylene		0.18	1.2					
Chlorobenzene	8.2		8.8	100				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

DUPLICATE ANALYSIS

EPA METHOD 602
VOLATILE ORGANICS

SAMPLE # 8602176-01C
UNITS ug/l (860195)

COMPOUND	RUN#1	RUN#2	RPD
* Benzene	0.78	0.75	3.9
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

* did not confirm

DAILY QUALITY CONTROL

RAS GC LAB

DATE: 2/27/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST								
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	40.5	35.8		132	117	
	Toluene	4.1	4.9	4.6		120	113	
	Ethylbenzene	11.5	13.2	11.9		114	104	
	P-Xylene	19.1	23.3	21.2		122	111	
	M-Xylene	42.6	78.0	52.3		183	123	
	O-Xylene	10.6	9.6	9.0		91	85	
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

2/27/76

G

G

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	QAC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.8	96
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	7.0	70
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4	8	
Chloroform	43.0	57.6	134
1,2-Dichloroethane	27.6	21.8	79
1,1,1-Trichloroethane	14.3	13.6	95
Carbon tetrachloride	20.0	16.7	83
Bromodichloromethane	7.9	8.5	107
1,2-Dichloropropane	8.0	7.6	95
Trichloroethene	22.2	21.1	95
Dibromochloromethane	16.7	13.6	82
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	9.5	95
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	7.7	94
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	0/08/16	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D				
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC.3		G	G			
	Methylene Chloride	9.2	10.6	115			
	1,1-Dichloroethylene	10.0	8.2	82			
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	50.2	117			
	1,2-Dichloroethane	27.6	43.7	158			
	1,1,1-Trichloroethane	14.3	15.7	110			
	Carbon Tetrachloride	20.0	19.8	99			
	Bromodichloromethane	7.9	10.9	138			
	1,2-Dichloropropane	8.0	8.6	107			
	Trichloroethene	22.2	24.1	108			
	Dibromochloromethane	16.7	18.9	113			
	Bromoform	9.9	9.3	94			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	9.8	119			
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	33.6	109			
	Toluene	4.1	3.7	91			
	Ethylbenzene	11.5	10.4	90			
	P-Xylene	19.1	18.9	99			
	M-Xylene	42.6	42.7	100			
	O-Xylene	10.6	7.7	73			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

SURROGATE RECOVERIES

LAB #: 8002176-01A

SAMPLE ID: 800195

DATE: 2-27-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 97

2-BROMO-1-CHLOROPROPANE: 115

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 80002176-02A

SAMPLE ID: 800196

DATE: 2-27-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100

2-BROMO-1-CHLOROPROPANE: 117

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8002176-C3A

SAMPLE ID: 800197

DATE: 2-27-86

INSTRUMENT: E

601/8010

BROMOCHLOROMETHANE: 110

2-BROMO-1-CHLOROPROPANE: 135

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81002176-C4B

SAMPLE ID: 810098

DATE: 2-27-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 101

2-BROMO-1-CHLOROPROPANE: 105

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602176-05A

SAMPLE ID: 860200

DATE: 2-27-86

INSTRUMENT: C

601/8010

BROMOCHLOROMETHANE: 115

2-BROMO-1-CHLOROPROPANE: 135

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 800076-01C

SAMPLE ID: 800195

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 108, 110

SURROGATE RECOVERIES

LAB #: 86021710-CAC

SAMPLE ID: 8600196

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 114

SURROGATE RECOVERIES

LAB #: 860176-03C

SAMPLE ID: 860197

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 104

SURROGATE RECOVERIES

LAB #: 8602176-046

SAMPLE ID: 8600198

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103

SURROGATE RECOVERIES

LAB #: 86021740-C5C

SAMPLE ID: 860200

DATE: 2-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 110

SURROGATE RECOVERIES

LAB #: 8602740-16A

SAMPLE ID: 8600199

DATE: 2-23-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 97

Form V

Q. C. Report No. 3
SPIKE SAMPLE RECOVERY

LAB NAME Radian

DATE 3-31-86

Plant 4
CASE NO. 8602176-05
EPA Sample No. -
Lab Sample ID No. analytical
Units ug/ml

Matrix water

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	XR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.034	0.093	1.0	94
5. Beryllium	-				
6. Cadmium	-	0.872	<0.002	1.0	87
7. Calcium	-				
8. Chromium	-	0.926	*0.014	1.0	91
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.954	*0.008	1.0	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ XR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5 x idl

for worksheet
86-02-047
86-02-176
86-02-197
86-03-004

Form II pg 2

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS µg/ml

Compound

Initial Calib.¹

Continuing Calibration²

Metals:	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method ⁴
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99	0.99	99	P
5. Beryllium									
6. Cadmium				1.00	1.00	100	1.00	100	P
7. Calcium									
8. Chromium				1.00	0.99	99	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99	1.00	100	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____

² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders:

86-02-047

86-02-176

86-02-197

86-03-004

ICP QC DATA - PLANT 4

Form II 89¹

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS µg/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.98	98	0.99	99	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	0.99	99	1.02	102	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	0.99	99	1.01	101	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.98	98	1.00	1.01	101	1.00	100	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____

² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders:
8602047, 8602176
8602197 & 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Baden
DATE 3-31-86

CASE NO. Plant 4
UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							for 8603004
2. Antimony							
3. Arsenic							
4. Barium							<0.002
5. Beryllium							
6. Cadmium							<0.002
7. Calcium							
8. Chromium							<0.005
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							<0.002
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

for work orders
8602047, 8602176,
8602197, 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Radiation

CASE NO. Plant 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:							
1. Aluminum						for 8602047	for 8602197
2. Antimony							
3. Arsenic							
4. Barium	<0.001	*0.002	<0.001	<0.001	<0.001	<0.001	*0.002
5. Beryllium							
6. Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
7. Calcium							
8. Chromium	<0.005	*0.010	<0.005	<0.005	<0.005	<0.005	<0.005
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<0.002	0.025	0.013	*0.005	*0.010	<0.002	<0.002
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

SAC

EP-25, 860145, 860146, 860147, 860200

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address Cummins Engine Co., Ltd., Plant 4

Sample Point Description Cummins Engine

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 2-26-87

Amount of Sample Collected Eight 1000 ml glass

Sample Description Exhaust

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 86-02-179

Comments _____

Inclusive Dates of Possession 2-26-87

Organization Name AS-SAC

Received By David Johnson Date Received 2/27/87 Time 10:30

Transported By Joe X 34391440 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

AUSTIN

EPA 601 : 860201, 860202, 860203, 860204, 860205, 860206
EPA 602 : 860201, 860202, 860203, 860204, 860205, 860206
METALS : 860201, 860202, 860203, 860204, 860205, 860206
CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics, Ft Worth - Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Fred Snyder Date/Time Sampled 2/27/86

Amount of Sample Collected _____

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. 86 02 97

Comments _____

Inclusive Dates of Possession 2/27/86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Form VI

Q. C. Report No. 3

DUPLICATES

LAB NAME RadianDATE 3-31-86CASE NO. Plant 4
8602197-05EPA Sample No. Lab Sample ID No. Units ug/mlpredigestionMatrix water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.682	0.769	12.0
5. Beryllium				
6. Cadmium		<0.002	<0.002	NC
7. Calcium				
8. Chromium		0.081	0.095	13.9
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		*0.010	0.012	18.2
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

✓ Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

1 - Non calculable RPD due to value(s) less than CRDL

*indicates value is less than 5xidl

B - 12

Form V

Q. C. Report No. 3
SPIKE SAMPLE RECOVERY

LAB NAME Radian
DATE 3-31-86

Plant 4
CASE NO. 8602197-06
EPA Sample No. -
Lab Sample ID No. analytical
Units ug/ml

Matrix water

Compound	Control Limit XR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	XR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	0.986	0.039	1.0	95
5. Beryllium	-				
6. Cadmium	-	0.880	<0.002	1.0	88
7. Calcium	-				
8. Chromium	-	0.928	*0.014	1.0	91
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.974	0.020	1.0	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ XR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5 x LCL

Form V

Q. C. Report No. 3
SPIKE SAMPLE RECOVERY

Plant 4

LAB NAME RadianCASE NO. 8602197-06DATE 3-31-86EPA Sample No. -Lab Sample ID No. productionUnits ug/mlMatrix water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.758	0.039	2.0	86
5. Beryllium	-				
6. Cadmium	-	0.035	<0.002	0.05	70
7. Calcium	-				
8. Chromium	-	0.171	*0.014	0.2	79
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.207	0.020	0.25	91
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: * indicates value is less than 5 x 10¹

Volatile Organics

Report 3

GC PC
DETECTION LIMITS

#8602197

METHOD 601		METHOD DETECTION LIMIT	
COMPOUND			
	-012-06		
Chloromethane	0.08		
Bromomethane	1.18		
Vinyl Chloride	0.18		
Chloroethane	0.52		
Methylene Chloride	0.25		
Trichlorofluoromethane	0.10		
1,1-Dichloroethene	0.13		
1,1-Dichloroethane	0.07		
Trans-1,2-Dichloroethene	0.10		
Chloroform	0.13		
1,2-Dichloroethane	0.07		
1,1,1-Trichloroethane	0.10		
Carbon Tetrachloride	0.05		
Bromodichloromethane	0.03		
1,2-Dichloropropane	0.03		
Trichloroethene	0.12		
Dibromochloromethane	0.10		
2-Chloroethylvinyl Ether	0.04		
Bromoform	0.12		
Tetrachloroethene	0.03		
Chlorobenzene	0.25		
1,3-Dichlorobenzene	0.32		
1,2-Dichlorobenzene	0.15		
1,4-Dichlorobenzene	0.24		

DETECTION LIMITS

VOLATILE ORGANICS

METHOD 602

8602197

COMPOUND	DETECTION LIMIT								
BENZENE	0.20								
TOLUENE	0.20								
ETHYL BENZENE	0.20								
CHLOROBENZENE	0.20								
1,4-DICHLOROBENZENE	0.30								
1,3-DICHLOROBENZENE	0.40								
1,2-DICHLOROBENZENE	0.40								

VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID			
EPA METHOD		DATE:		EPA METHOD		DATE:	
601		ANALYST:		602		ANALYST:	
		INSTRUMENT:				INSTRUMENT:	
COMPOUND		CONCENTRATION (ug/L)		COMPOUND		CONCENTRATION (ug/L)	
Chloromethane				Benzene			
Bromomethane				Toluene			
Vinyl Chloride				Ethyl benzene			
Chloroethane				Chlorobenzene			
Methylene chloride				1,4-Dichlorobenzene			
Trichlorofluoromethane				1,3-Dichlorobenzene			
1,1-Dichloroethene				1,2-Dichlorobenzene			
1,1-Dichloroethane				P-Xylene			
Trans-1,2-Dichloroethene				M-Xylene			
Chloroform				O-Xylene			
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
Trans-1,3-Dichloropropene							
Trichloroethene							
Dibromochloromethane							
1,1,2-Trichloroethane							
cis-1,3-Dichloropropene							
2-Chloroethylvinyl ether							
Bromoform							
1,1,2,2-Tetrachloroethane							
Tetrachloroethylene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							

VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:		
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)		
Chloromethane		Benzene		<div style="text-align: center;">No</div>	
Bromomethane		Toluene			
Vinyl Chloride		Ethyl benzene			
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichlorethane		1,2-Dichlorobenzene			
1,1-Dichloroethane		P-Xylene			
Trans-1,2-Dichloroethene		M-Xylene			
Chloroform		O-Xylene			
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon tetrachloride					
Bromodichlormethane					
1,2-Dichloropropane					
Trans-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichloroethane					
cis-1,3-Dichloropropene					
2-Chloroethylvinyl ether					
Bromoform					
1,1,2,2-Tetrachloroethane					
Tetrachloroethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					
		SURROGATE RECOVERIES:			
		601			
			Bromochloromethane		
			2-Bromo-1-Chloropropane		
			1,4-Dichlorobutane		
		602			
			a,a,a,-Trifluorotoluene		

VOA RESULTS

LAB #		SYSTO Bank	
CLIENT NAME			
SAMPLE ID			
EPA METHOD		EPA METHOD	
601		602	
DATE: 2/24/86		DATE:	
ANALYST: JSC		ANALYST:	
INSTRUMENT: Jemini		INSTRUMENT:	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	N2	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>NEW GWT Blank</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>2/2/72</u> ANALYST: <u>RP</u> INSTRUMENT: <u>Herman</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N/D</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

RADIAN
 CORPORATION

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8602197-02A Parr Y 80202 Sam				2/20/26 AP G			
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	Z
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	9.7	0.33	9.2	102				
Trichlorofluoromethane								
1,1-Dichloroethene	8.0		100	80				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	6.1	0.74	5.4	100				
Chloroform	49.0		430	114				
1,2-Dichloroethane	41.0		22.6	149				
1,1,1-Trichloroethane	17.6		14.3	123				
Carbon Tetrachloride	23.6		22.0	118				
Bromodichloroemethane	10.0		7.9	127				
1,2-Dichloropropane	10.1		8.0	127				
Trichloroethene	26.8	0.31	22.2	128				
Dibromochloromethane	19.7		16.7	118				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	12.5		9.9	126				
1,1,2,2-Tetrachloreothane			10.0					
Tetrachloreethylene		0.08	6.2					
Chlorobenzene	10.3		8.2	126				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	2/23/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D				
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2		G	G			
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2	10.6	115			
	1,1-Dichloroethylene	10.0	8.2	82			
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	50.2	117			
	1,2-Dichloroethane	27.6	43.7	158			
	1,1,1-Trichloroethane	14.3	15.7	110			
	Carbon Tetrachloride	20.0	19.8	99			
	Bromodichloromethane	7.9	10.9	133			
	1,2-Dichloropropane	8.0	8.6	107			
	Trichloroethene	22.2	24.1	108			
	Dibromochloromethane	16.7	18.9	113			
	Bromoform	9.9	9.3	94			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	9.3	114			
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	33.6	109			
	Toluene	4.1	3.7	91			
	Ethylbenzene	11.5	10.4	90			
	P-Xylen	19.1	18.4	96			
	M-Xylene	42.6	42.7	100			
	O-Xylene	10.6	11.1	104			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	2/23/76	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D				
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3		G	G			
	Methylene Chloride	9.2	10.6	115			
	1,1-Dichloroethylene	10.0	8.2	82			
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	50.2	117			
	1,2-Dichloroethane	27.6	43.7	158			
	1,1,1-Trichloroethane	14.3	15.7	110			
	Carbon Tetrachloride	20.0	19.3	97			
	Bromodichloromethane	7.9	10.9	133			
	1,2-Dichloropropane	8.0	8.6	107			
	Trichloroethene	22.2	24.1	108			
	Dibromochloromethane	16.7	13.4	113			
	Bromoform	9.9	9.3	94			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	9.8	119			
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	33.6	109			
	Toluene	4.1	3.7	91			
	Ethylbenzene	11.5	10.4	90			
	P-Xylene	19.1	18.4	96			
	M-Xylene	42.6	42.7	100			
	O-Xylene	10.6	7.1	67			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

SURROGATE RECOVERIES

LAB #: 8000197-01A

SAMPLE ID: 800001

DATE: 2-28-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 119

2-BROMO-1-CHLOROPROPANE: 122

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602197-02A

SAMPLE ID: 860202

DATE: 2-28-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 113

2-BROMO-1-CHLOROPROPANE: 10.1

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602197-03A

SAMPLE ID: 860203

DATE: 2-28-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100

2-BROMO-1-CHLOROPROPANE: 93

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8002197-C4A

SAMPLE ID: 800204

DATE: 2-28-86

INSTRUMENT: 4

601/8010

BROMOCHLOROMETHANE: 135

2-BROMO-1-CHLOROPROPANE: 121

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8002197-05A

SAMPLE ID: 800205

DATE: 2-28-86

INSTRUMENT: C

601/8010

BROMOCHLOROMETHANE: 122

2-BROMO-1-CHLOROPROPANE: 111

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8602197-06A

SAMPLE ID: 860206

DATE: 2-28-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 101

2-BROMO-1-CHLOROPROPANE: 107

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 86C2197

SAMPLE ID: 86C801

DATE: 2-28-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 1C3

SURROGATE RECOVERIES

LAB #: 8602197-02C

SAMPLE ID: 860202

DATE: 2-28-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 119

SURROGATE RECOVERIES

LAB #: 860297-C3C

SAMPLE ID: 860203

DATE: 2-28-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 164

SURROGATE RECOVERIES

LAB #: 8002A7-C4C

SAMPLE ID: 8600004

DATE: 2-28-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 115

SURROGATE RECOVERIES

LAB #: 8602197-05C

SAMPLE ID: 860205

DATE: 2-28-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 104

SURROGATE RECOVERIES

LAB #: 8602197-01cc

SAMPLE ID: 860206

DATE: 2-21-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 104

for work orders
8602047, 8602176,
8602197 & 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:						for 8602047	for 8602197 8602197
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<0.001	*0.002	<0.001	<0.001	<0.001	<0.001	*0.002
5. Beryllium							
6. Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
7. Calcium							
8. Chromium	<0.005	*0.010	<0.005	<0.005	<0.005	<0.005	<0.005
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<0.002	0.025	0.013	*0.005	*0.010	<0.002	<0.002
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

for work orders:
8602047, 8602176
8602197 & 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Radon

CASE NO. Plant 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	1	2	3	4	1	2
Metals:						for 8603004	
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						<0.002	
5. Beryllium							
6. Cadmium						<0.002	
7. Calcium							
8. Chromium						<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

For work orders:

86-02-047

86-02-176

86-02-197

86-03-004

ICP QC DATA - PLANT 4

Form II 991

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radiation

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS µg/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	%R	True Value	Found	%R	Found	%R	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.98	98	0.99	99	P
5. Beryllium									
6. Cadmium	1.00	0.98	98	1.00	0.99	99	1.02	102	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	0.99	99	1.01	101	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.98	98	1.00	1.01	101	1.00	100	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

6 255

for worksheets
86-02-047
86-02-176
86-02-197
86-03-004

Form II 192

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO.

DATE 3-31-86

UNITS µg/ml

Compound

Initial Calib.¹

Continuing Calibration²

Metals:	True Value	Found	XR	True Value	Found	XR	Found	XR	Method ⁴
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99	0.99	99	P
5. Beryllium									
6. Cadmium				1.00	1.00	100	1.00	100	P
7. Calcium									
8. Chromium				1.00	0.99	99	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99	1.00	100	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source

² Continuing Calibration Source

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

RADIAN
CORPORATION

SAC

EPA 625 820201, 820202, 820203, 820204, 820205, 820206
(1) (2) (2) (2) (2)

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address General Dynamics - Ft. Worth - Plant 4

Sample Point Description Ground Water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Fred Snyder Date/Time Sampled 2/27/86

Amount of Sample Collected 11 - 1622ml amber glass

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 2-27-86

Organization Name Radian Analytical Svc S

Received By Wanda Brown Date Received 2/28/86 Time 10:30

Transported By Fred X 343914384 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION
RAS

EPA 601: 860172, 860212, 860207, 860211, 860208, 860210, 860209
EPA 602: 860212, 860207, 860211, 860208, 860210, 860209
HC-FUELS: 860210, 860208, 860211, 860207, 860212, 860209
OIL & GREASE: 860210, 860212, 860211, 860208, 860207, 860209
METALS: 860209, 860216, 860210, 860211, 860212,

2 TRIP BLANKS INCLUDED

Field Sample No. _____

Company Sampled/Address GENERAL DYNAMICS, FORT WORTH, PLANT 4
Sample Point Description GROUND WATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name F. SNYDER Date/Time Sampled 2/28/86

Amount of Sample Collected (23) 10A's, (12) Mason jars (G's), (5) ~~500ml~~ 500ml Plastic

Sample Description GROUND WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RADIAN CORP.

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. 86-1-3-002

Comments _____

Inclusive Dates of Possession 2/28/86 - 3/1/86

Organization Name RAS

Received By Joe Tindley Date Received 3-3-86 Time 0900

Transported By FS Lab Sample No. 8603002, 004

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Volatile Organics

DETECTION LIMITS

#5113002

METHOD			METHOD
			DETECTION
			LIMIT
COMPOUND	-05,-06,-08 -01,-02	-07 -03,-04	
Chloromethane	0.08	0.08	
Bromomethane	0.18	0.18	
Vinyl Chloride	0.18	0.18	
Chloroethane	0.52	0.52	
Methylene Chloride	0.25	0.25	
Trichlorofluoromethane	0.10	0.31	
1,1-Dichloroethene	0.13	0.13	
1,1-Dichloroethane	0.07	0.07	
Trans-1,2-Dichloroethene	0.10	0.10	
Chloroform	0.05	0.05	
1,2-Dichloroethane	0.03	0.03	
1,1,1-Trichloroethane	0.03	0.03	
Carbon Tetrachloride	0.12	0.12	
Bromodichloromethane	0.10	0.10	
1,2-Dichloropropane	0.04	0.04	
Trichloroethene	0.12	0.12	
Dibromochloromethane	0.09	0.09	
2-Chloroethylvinyl Ether	0.13	0.13	
Bromoform	0.20	0.20	
Tetrachloroethene	0.03	0.03	
Chlorobenzene	0.25	0.25	
1,3-Dichlorobenzene	0.32	0.32	
1,2-Dichlorobenzene	0.15	0.15	
1,4-Dichlorobenzene	0.24	0.24	

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

#K4603000

COMPOUND	DETECTION LIMIT					
	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
BENZENE	0.2					
TOLUENE	0.2					
ETHYLBENZENE	0.2					
CHLOROBENZENE	0.2					
1,4-DICHLOROBENZENE	0.3					
1,3-DICHLOROBENZENE	0.4					
1,2-DICHLOROBENZENE	0.4					

VOA RESULTS

LAB # <u>SYSA-BLML</u>			
CLIENT NAME _____			
SAMPLE ID _____			
-----		-----	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>3/5/86</u> ANALYST: <u>JSC</u> INSTRUMENT: <u>22</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>NO</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	
	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	
	a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		REAGENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 3/5/86 ANALYST: OMV INSTRUMENT: OMV
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: _____		DATE: 3/4/26	
ANALYST: _____		ANALYST: C	
INSTRUMENT: _____		INSTRUMENT: 2000	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		REAGENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 3/4/76 ANALYST: RP INSTRUMENT: Delmar
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>System Check</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>3/4/86</u> ANALYST: <u>JS</u> INSTRUMENT: <u>Shimadzu</u>	EPA METHOD 602 DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>ND</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____		DATE: _____	
EPA METHOD	DATE:	EPA METHOD	DATE:
601	ANALYST:	602	ANALYST:
INSTRUMENT:		INSTRUMENT:	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: <u>3/1/06</u> ANALYST: <u>C</u> INSTRUMENT: <u>Dumette</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N2</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane _____	
Dibromochloromethane		2-Bromo-1-Chloropropane _____	
1,1,2-Trichloroethane		1,4-Dichlorobutane _____	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether	a,a,a,-Trifluorotoluene _____		
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>1000000000</u>			
CLIENT NAME <u></u>			
SAMPLE ID <u></u>			
EPA METHOD 601		DATE: <u>3/1/86</u>	EPA METHOD 602
		ANALYST: <u>C. J. Bunker</u>	DATE: <u></u>
		INSTRUMENT: <u>GC/MS</u>	ANALYST: <u></u>
			INSTRUMENT: <u></u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane	<u>0.81</u>	1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/5/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D			
TEST METHOD EPA 601	COMPOUND EPA WP 483 CONC. 2 AND WP 781 CONC.3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0					
	1,2-Dichloroethane	27.6					
	1,1,1-Trichloroethane	14.3					
	Carbon Tetrachloride	20.0					
	Bromodichloromethane	7.9					
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2					
	Dibromochloromethane	16.7					
	Bromoform	9.9					
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	34.3	112			
	Toluene	4.1	4.5	110			
	Ethylbenzene	11.5	12.3	107			
	P-Xylene	19.1	21.4	112			
	M-Xylene	42.6	50.9	120			
	O-Xylene	10.6	9.1	86			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/4/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		B	B		=G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2	9.0	98		7.8	85
	1,1-Dichloroethylene	10.0	8.1	81		7.4	74
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	46.2	108		59.1	137
	1,2-Dichloroethane	27.6	20.9	76		20.8	75
	1,1,1-Trichloroethane	14.3	13.1	91		14.0	98
	Carbon Tetrachloride	20.0	17.1	85		19.2	96
	Bromodichloromethane	7.9	7.1	89		8.6	109
	1,2-Dichloropropane	8.0	7.5	93		7.7	97
	Trichloroethene	22.2	18.7	84		22.9	103
	Dibromochloromethane	16.7	14.4	86		14.3	86
	Bromoform	9.9	8.0	81		9.6	97
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	8.2	100		8.2	100
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7					
	Toluene	4.1					
	Ethylbenzene	11.5					
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	03/04/86	RP	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
		INSTRUMENT DELORIS						
TEST METHOD	COMPOUND							
EPA 601	EPA WP 483 CONC. 2							
	AND WP 781 CONC.3							
	Methylene Chloride		9.2					
	1,1-Dichloroethylene		10.0					
	Trans-1,2-Dichloroethylene		5.4					
	Chloroform		43.0					
	1,2-Dichloroethane		27.6					
	1,1,1-Trichloroethane		14.3					
	Carbon Tetrachloride		20.0					
	Bromodichloromethane		7.9					
	1,2-Dichloropropane		8.0					
	Trichloroethene		22.2					
	Dibromochloromethane		16.7					
	Bromoform		9.9					
	1,1,2,2-Tetrachloroethane		10.0					
	Tetrachloroethene		6.2					
	Chlorobenzene		8.2					
EPA 602	EPA - WP 879 CONC.1							
	✓ Benzene		30.7	34.8	113			
	✓ Toluene		4.1	4.6	113			
	✓ Ethylbenzene		11.5	13.44	116			
	✓ P-Xylene		19.1	22.2	116			
	✓ M-Xylene		42.6	51	120			
	✓ O-Xylene		10.6	9.22	87			
EPA 608			(ug/g)					
	Aroclor 1242		58.7					
	Aroclor 1260		56.8					

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8603002-0418 PARTY 860209 3/5/86 RP G							
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	8.70	0.37	9.2	91				
Trichlorofluoromethane								
1,1-Dichloroethene	7.3		10.0	73				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	6.2	0.99	5.4	97				
Chloroform	61.0		43.0	143				
1,2-Dichloroethane	25.8		27.6	94				
1,1,1-Trichloroethane	16.4	0.07	14.3	114				
Carbon Tetrachloride	22.9		20.0	115				
Bromodichloroemethane	9.7		7.9	122				
1,2-Dichloropropane	8.6		7.0	107				
Trichloroethene	67.0	32.3	22.2	156				
Dibromochloromethane	11.8		16.7	71				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	11.2		9.9	113				
1,1,2,2-Tetrachlorethane			10.0					
Tetrachlorethylene		0.17	6.2					
Chlorobenzene	9.1		7.2	110				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene		5.03						
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

SPIKE RECOVERY

EPA Method 602

Volatile Organics

3/5/76
D
C

SAMPLE # 860202-06C

UNITS PUMP 4 860211

Spec

COMPOUND	SSR	SR	SA	ZR
Benzene	35.5		32.7	116
Toluene	5.42	1.64	4.1	92
Ethyl benzene	12.8		11.5	112
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene	9.1		10.6	86
M-Xylene	77.7		42.6	182
P-Xylene	22.1		19.1	116
Chlorobenzene				

• *BAD INTEGRATION*

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane	ND	ND	NC			
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene	7	7	7			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

SURROGATE RECOVERIES

LAB #: 8603002-C1A

SAMPLE ID: 860172

DATE: 3-4-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 99

2-BROMO-1-CHLOROPROPANE: 89

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8603002-02A

SAMPLE ID: 860207

DATE: 3-4-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 163.86

2-BROMO-1-CHLOROPROPANE: 75.83

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81003002-C3A

SAMPLE ID: 8100308

DATE: 3-4-86

INSTRUMENT: B

601/8010

BROMOCHLOROMETHANE: 107

2-BROMO-1-CHLOROPROPANE: 104

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8103008-64A

SAMPLE ID: 8100209

DATE: 3-4-86

INSTRUMENT: B

601/8010

BROMOCHLOROMETHANE: 112

2-BROMO-1-CHLOROPROPANE: 129

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8603002-CEA

SAMPLE ID: 860210

DATE: 3-4-86

INSTRUMENT: 4

601/8010

BROMOCHLOROMETHANE: 120

2-BROMO-1-CHLOROPROPANE: 82

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8003002-01A

SAMPLE ID: 800211

DATE: 3-4-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 116

2-BROMO-1-CHLOROPROPANE: 80

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SLC3002-07A

SAMPLE ID: SLC0812

DATE: 3-4-86

INSTRUMENT: B

601/8010

BROMOCHLOROMETHANE: 165

2-BROMO-1-CHLOROPROPANE: 96

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8003002-05A

SAMPLE ID: TRIP BLANK

DATE: 3-9-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 99

2-BROMO-1-CHLOROPROPANE: 79

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8003002-020

SAMPLE ID: 800207

DATE: 3-4-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 77

SURROGATE RECOVERIES

LAB #: 8003002-030

SAMPLE ID: 800208

DATE: 3-4-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 921

AD-A190 446

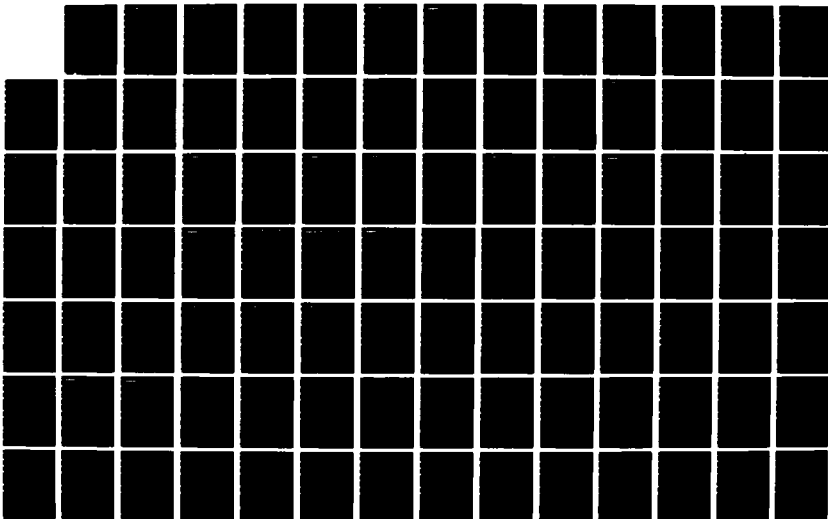
INSTALLATION RESTORATION PROGRAM PHASE 2
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4001

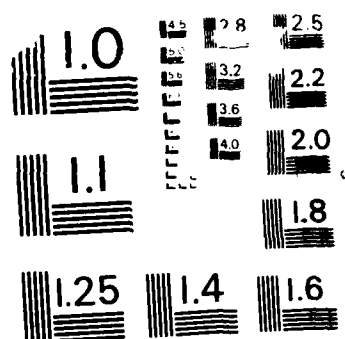
4/6

UNCLASSIFIED

F/G 24/7

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SURROGATE RECOVERIES

LAB #: 8613002-640

SAMPLE ID: 860209

DATE: 3-4-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 95

SURROGATE RECOVERIES

LAB #: 3603002-156

SAMPLE ID: 860310

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 101

SURROGATE RECOVERIES

LAB #: 8603002-000

SAMPLE ID: 860211

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 4B

SURROGATE RECOVERIES

LAB #: SCC212-17C

SAMPLE ID: SCC212

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 97

RADIAN
CORPORATION

SURROGATE RECOVERIES

LAB #: 8603002-CEB

SAMPLE ID: TRIP BLANK

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 94

RADIAN
CORPORATION
RAS

EPA 601 : 860215, 860216, 860213, 860214, 860217
EPA 602 : 860215, 860216, 860213, 860214, 860217
HC-FUELS : 860213, 860217, 860215, 860214
OIL/GREASE : 860215, 860214, 860217, 860213
METALS : 860215, 860214, 860213

ALSC.
(2) TRIP BLANKS

CHAIN OF CUSTODY RECORD

FIELD BLANKS : 860216, 860213

Field Sample No. _____

Company Sampled/Address GENERAL DYNAMICS, FORT WORTH, PLANT 4
Sample Point Description GROUND WATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name F. SNYDER Date/Time Sampled 3/1/86

Amount of Sample Collected (30) LBA's, (8) QT. Mason jars, (3) 500 ml Plastic

Sample Description GROUNDWATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input checked="" type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RADIAN CORP.

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. 50-03-003

Comments _____

Inclusive Dates of Possession 3/1/86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Volatile Organics

DETECTION LIMITS

#8003003

METHOD			METHOD
			DETECTION
			LIMIT
COMPOUND	-C1, C2, C8	-C2, C3	
Chloromethane	0.08	0.08	
Bromomethane	1.18	1.18	
Vinyl Chloride	0.18	0.18	
Chloroethane	0.52	0.52	
Methylene Chloride	0.51	0.25	
Trichlorofluoromethane	0.10	0.10	
1,1-Dichloroethene	0.13	0.13	
1,1-Dichloroethane	0.07	0.07	
Trans-1,2-Dichloroethene	0.10	0.10	
Chloroform	0.05	0.05	
1,2-Dichloroethane	0.03	0.03	
1,1,1-Trichloroethane	0.03	0.03	
Carbon Tetrachloride	0.12	0.12	
Bromodichloromethane	0.10	0.10	
1,2-Dichloropropane	0.04	0.04	
Trichloroethene	0.12	0.12	
Dibromochloromethane	0.09	0.09	
2-Chloroethylvinyl Ether	0.13	0.13	
Bromoform	0.20	0.20	
Tetrachloroethene	0.03	0.03	
Chlorobenzene	0.25	0.25	
1,3-Dichlorobenzene	0.32	0.32	
1,2-Dichlorobenzene	0.15	0.15	
1,4-Dichlorobenzene	0.24	0.24	

DETECTION LIMITS

VOLATILE ORGANICS

METHOD

#8603003

COMPOUND	-01.4-66 -08		-07		DETECTION LIMIT				
BENZENE	0.2		1.0						
TOLUENE	0.2		1.0						
ETHYLBENZENE	0.2		1.0						
CHLOROBENZENE	0.2		1.0						
1,4-DICHLOROBENZENE	0.3		1.5						
1,3-DICHLOROBENZENE	0.4		2.0						
1,2-DICHLOROBENZENE	0.4		2.0						

VOA RESULTS

LAB # <u>5850m BURL</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>3/5/96</u>	EPA METHOD 602
		ANALYST: <u>JSC</u>	DATE: _____
		INSTRUMENT: <u>4400</u>	ANALYST: _____
			INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>ND</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	_____
Dibromochloromethane		2-Bromo-1-Chloropropane	_____
1,1,2-Trichloroethane		1,4-Dichlorobutane	_____
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	_____
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>None Blank</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>3/5/92</u> ANALYST: <u>CP</u> INSTRUMENT: <u>Dumas</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride	<u>0.51</u>	1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethane		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 3/5/76 ANALYST: JSC INSTRUMENT: JDL
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		DATE: _____	
CLIENT NAME _____		ANALYST: _____	
SAMPLE ID _____		INSTRUMENT: _____	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 3/5/81 ANALYST: JDAV INSTRUMENT: 102
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	No
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichlorethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 3/4/86 ANALYST: JSC INSTRUMENT: Gemini	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____		DATE: _____	
EPA METHOD	DATE: _____	EPA METHOD	DATE: _____
601	ANALYST: _____	602	ANALYST: _____
INSTRUMENT: _____		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/5/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC.3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0					
	1,2-Dichloroethane	27.6					
	1,1,1-Trichloroethane	14.3					
	Carbon Tetrachloride	20.0					
	Bromodichloromethane	7.9					
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2					
	Dibromochloromethane	16.7					
	Bromoform	9.9					
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	34.3	112			
	Toluene	4.1	4.5	110			
	Ethylbenzene	11.5	12.3	107			
	P-Xylene	19.1	21.4	112			
	M-Xylene	42.6	50.9	120			
	O-Xylene	10.6	9.1	86			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/4/86	SPIKED VALUE (ug/L)	Analyzed Value	Z Recovery		Analyzed Value	Z Recovery
	INSTRUMENT		B	B		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2	9.0	98		7.2	85
	1,1-Dichloroethylene	10.0	8.1	81		7.4	74
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	46.2	108		59.1	137
	1,2-Dichloroethane	27.6	20.9	76		20.2	75
	1,1,1-Trichloroethane	14.3	13.1	91		14.0	98
	Carbon Tetrachloride	20.0	17.1	85		19.2	96
	Bromodichloromethane	7.9	7.1	89		8.6	109
	1,2-Dichloropropane	8.0	7.5	93		7.7	97
	Trichloroethene	22.2	13.7	62		22.9	103
	Dibromochloromethane	16.7	14.4	86		14.3	86
	Bromoform	9.9	8.0	81		9.6	97
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	8.2	100		8.2	100
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7					
	Toluene	4.1					
	Ethylbenzene	11.5					
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	3/5/84	SPIKED VALUE (ug/L)	Analyzed Value	Z Recovery		Analyzed Value	Z Recovery
	INSTRUMENT		G	G			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2	9.2	100			
	1,1-Dichloroethylene	10.0	8.9	89			
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	61.6	143			
	1,2-Dichloroethane	27.6	22.8	82			
	1,1,1-Trichloroethane	14.3	14.1	99			
	Carbon Tetrachloride	20.0	19.7	98			
	Bromodichloromethane	7.9	8.0	101			
	1,2-Dichloropropane	8.0	7.2	90			
	Trichloroethene	22.2	21.5	97			
	Dibromochloromethane	16.7	12.8	77			
	Bromoform	9.9	8.5	86			
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	8.6	104			
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7					
	Toluene	4.1					
	Ethylbenzene	11.5					
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8603003-04A Rm 4 860015 Sma				3/5/86 RP G-			
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	8.30	0.73	9.0	82				
Trichlorofluoromethane								
1,1-Dichloroethene	6.2	.	10.0	62				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	4.4		5.4	81				
Chloroform	56.4		43	131				
1,2-Dichloroethane	23.2		27.6	84				
1,1,1-Trichloroethane	15.3	.	14.3	107				
Carbon Tetrachloride	20.5		20.0	103				
Bromodichloroemethane	9.0		7.9	114				
1,2-Dichloropropane	8.8		8.0	110				
Trichloroethene	24.3		22.2	109				
Dibromochloromethane	14.4		16.7	86				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	10.8		9.9	109				
1,1,2,2-Tetrachlorethane			10.0					
Tetrachlorethylene			6.2					
Chlorobenzene	9.3		7.2	114				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

SPIKE RECOVERY

EPA Method 602

Volatile Organics

SAMPLE # 8603003-042

UNITS Part 4 860015
Sp

3/5/02
RP
D

COMPOUND	SSR	SR	SA	ZR
Benzene	36.8		32.7	120
Toluene	5.6	1.46	4.1	100
Ethyl benzene	13.4		11.5	116
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene	9.4		10.6	89
M-Xylene	54.2		42.6	127
P-Xylene	23.0		19.1	120
Chlorobenzene				

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

86C3003-USA
 860216

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene	3.9	5.3	30.4			
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform	0.36	0.56	43.5			
1,2-Dichloroethane						
1,1,1-Trichloroethane	16.7	21.5	25.1			
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene	8.0	10.5	27.0			
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
* Tetrachlorethylene	0.11	0.19	53.3			
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

* Did not confirm

SURROGATE RECOVERIES

LAB #: 8603003-CIA

SAMPLE ID: 860213

DATE: 3-5-86

INSTRUMENT: 6

601/8010

BROMOCHLOROMETHANE: 94

2-BROMO-1-CHLOROPROPANE: 114

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SU13003-02A

SAMPLE ID: FIELD BLANK

DATE: 3-4-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 100

2-BROMO-1-CHLOROPROPANE: 93

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81103003-03A

SAMPLE ID: 860214

DATE: 3-4-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 109

2-BROMO-1-CHLOROPROPANE: 103

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 86630CB-C4A

SAMPLE ID: 860215

DATE: 3-5-86

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 98

2-BROMO-1-CHLOROPROPANE: 96

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8603003-05A

SAMPLE ID: 860316

DATE: 3-5-86

INSTRUMENT: A

601/8010

BROMOCHLOROMETHANE: 118, 127

2-BROMO-1-CHLOROPROPANE: 117, 112

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8003003-11A

SAMPLE ID: FIELD BLANK

DATE: 3-5-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 110

2-BROMO-1-CHLOROPROPANE: 122

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8003003-07A

SAMPLE ID: 800217

DATE: 3-5-80

INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 99

2-BROMO-1-CHLOROPROPANE: 118

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: SICC3003-C8A

SAMPLE ID: TRIP BLACK

DATE: 3-5-86

INSTRUMENT: _____

601/8010

BROMOCHLOROMETHANE: 90

2-BROMO-1-CHLOROPROPANE: 80

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8403003-CIC

SAMPLE ID: 840213

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 95

SURROGATE RECOVERIES

LAB #: 8603003-G2C

SAMPLE ID: FIELD BANK

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 167

SURROGATE RECOVERIES

LAB #: 8443003-C3C

SAMPLE ID: 860214

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 107

SURROGATE RECOVERIES

LAB #: 8663003-040

SAMPLE ID: 860215

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 104

SURROGATE RECOVERIES

LAB #: 8603003-050

SAMPLE ID: 860416

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 107

SURROGATE RECOVERIES

LAB #: 8003003-000

SAMPLE ID: FIELD PLANK

DATE: 3-5-80

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 100

SURROGATE RECOVERIES

LAB #: 8663003-17C

SAMPLE ID: 866317

DATE: 3-5-86-

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 97

SURROGATE RECOVERIES

LAB #: 3663003-CSB

SAMPLE ID: TRIP BLANK

DATE: 3-5-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 97

RADIAN
CORPORATION
RAS

EPA 601: 860172, 860212, 860207, 860211, 860208, 860210, 860209

EPA 602: 860212, 860207, 860211, 860208, 860210, 860209

HC-FUELS: 860210, 860208, 860211, 860207, 860212, 860209

OIL & GREASE: 860210, 860212, 860211, 860208, 860207, 860209

CHAIN OF CUSTODY RECORD

METALS: 860209, 860216, 860210, 860211, 860212,

2 TRIP BLANKS INCLUDED

Field Sample No. _____

Company Sampled/Address GENERAL DYNAMICS, FORT WORTH, PLANT 4

Sample Point Description GROUND WATER

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name F. SNYDER Date/Time Sampled 2/28/86

Amount of Sample Collected (28) 10A's, (12) major (4) (9's), (5) ~~500ml~~ 500ml Plastic

Sample Description GROUND WATER

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RADIAN CORP.

Received By _____ Date Received _____ Time _____

Transported By Fred Snyder Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 2/28/86 - 3/1/86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Form VI

Q. C. Report No. 3

DUPLICATES

LAB NAME RadianDATE 3-31-86
 Plant 4
 CASE NO. 8603004-03
 EPA Sample No. _____
 Lab Sample ID No. analytical
 Units ug/ml
Matrix water

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.109	0.110	0.91
5. Beryllium				
6. Cadmium		<0.002	<0.002	NC
7. Calcium				
8. Chromium		<0.005	<0.005	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		<0.002	*0.006	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

✓ Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S - D)^2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

* indicates value is less than 5 xidl

B - 12

6 322

Form V

Q. C. Report No. 3
SPIKE SAMPLE RECOVERYLAB NAME RadianDATE 3-31-86CASE NO. Plant 4
8603004-10
EPA Sample No. -
Lab Sample ID No. axial typical
Units ug/mlMatrix water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	1.116	0.173	1.0	94
5. Beryllium	-				
6. Cadmium	-	0.870	<0.002	1.0	87
7. Calcium	-				
8. Chromium	-	0.988	0.069	1.0	92
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.960	0.013	1.0	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: _____

for work orders:
8602047, 8602176,
8602197; 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Radium

CASE NO. Plant 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		1	2	3	4	1	2
Metals:							
1. Aluminum						for 8602047	for 8602176, 8602197
2. Antimony							
3. Arsenic							
4. Barium	<0.001	*0.002	<0.001	<0.001	<0.001	<0.001	*0.002
5. Beryllium							
6. Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
7. Calcium							
8. Chromium	<0.005	*0.010	<0.005	<0.005	<0.005	<0.005	<0.005
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<0.002	0.025	0.013	*0.005	*0.010	<0.002	<0.002
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

for work orders
86-02-047
86-02-176
86-02-197
86-03-004

Form II pg 2

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS µg/ml

Compound Metals:	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99	0.99	99	P
5. Beryllium									
6. Cadmium				1.00	1.00	100	1.00	100	P
7. Calcium									
8. Chromium				1.00	0.99	99	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99	1.00	100	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

ICP QC DATA - PLANT 4

for work orders:

86-02-047
86-02-176
86-02-197
86-03-004

Form II 89¹

Q. C. Report No. 3

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radiation

CASE NO. Plant 4

SOW NO. _____

DATE 3-31-86

UNITS µg/ml

Compound		Initial Calib. ¹			Continuing Calibration ²					Method ⁴
Metals:		True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
1. Aluminum										
2. Antimony										
3. Arsenic										
4. Barium	1.00	0.99	99		1.00	0.98	98	0.99	99	P
5. Beryllium										
6. Cadmium	1.00	0.98	98		1.00	0.99	99	1.02	102	P
7. Calcium										
8. Chromium	1.00	0.98	98		1.00	0.99	99	1.01	101	P
9. Cobalt										
10. Copper										
11. Iron										
12. Lead										
13. Magnesium										
14. Manganese										
15. Mercury										
16. Nickel										
17. Potassium										
18. Selenium										
19. Silver	1.00	0.98	98		1.00	1.01	101	1.00	100	P
20. Sodium										
21. Thallium										
22. Tin										
23. Vanadium										
24. Zinc										
Other:										
Cyanide										

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

for work orders:
8602047, 8602176
8602197 & 8603004

Form III

Q. C. Report No. 3

BLANKS

LAB NAME Radian

CASE NO. Plant 4

DATE 3-31-86

UNITS ug/ml

Matrix water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	1	2	3	4	1	2
Metals:						for 8603004	
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium						<0.002	
5. Beryllium							
6. Cadmium						<0.002	
7. Calcium							
8. Chromium						<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver						<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							



542

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address _____

Sample Point Description _____

Stream Characteristics:

Temperature _____

Flow _____

pH _____

Visual Observations/Comments _____

Collector's Name _____

Date/Time Sampled _____

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient☐ 5°C☐ -10°C☒ Other

4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)☐ Non-hazardous sample☒ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☒ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled / Address General Dynamics, Ft Worth, Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations / Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 3/1/84

Amount of Sample Collected 2041 - 1000 ml. glass

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation / Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 36746446

Comments _____

Inclusive Dates of Possession 3/1/84

Organization Name Y. A. C. - SAC

Received By Wendy Johnson Date Received 3/4/84 Time 10:10

Transported By Wendy Johnson Lab Sample No. 736746446

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

736746446



6 329

CHAIN OF CUSTODY RECORD

860025
Field Sample No. 860026Company Sampled/Address AIR FORCE PLANT 4Sample Point Description P-20 AND P-21 MUD PITSStream Characteristics: NA

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name PETER A WATERREUS Date/Time Sampled 2/28/86 1520-1530Amount of Sample Collected 2-500ml glass + NO 4-VOASSample Description DRILLING MUDStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS -Received By THE KUNDSEN Date Received 3-3-86 Time 0900Transported By PAW Lab Sample No. _____Comments VOAS to SUC

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

860217, 820218
601 860220, 820218
602 860220, 860219, 860218

CHAIN OF CUSTODY RECORD

Metals 860218, 820219
Field Sample No. _____

Company Sampled/Address Radco General Dynamics Plant 4
Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. Johnson, D. Hise Date/Time Sampled 7/10/82

Amount of Sample Collected 12 VOAS, 2 musen, 2 500 ml plastic

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name Radco

Received By Wendy Johnson Date Received 7/10/82 Time _____

Transported By Wendy Johnson Lab Sample No. 860218

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME _____

CASE NO. 8604069-01-02

SOW NO. _____

A. DATE 5-20-86UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	0.999	100	1.0	1.032	102	0.998	100	P
5. Beryllium									
6. Cadmium	1.0	1.007	101	1.0	1.033	103	1.004	100	P
7. Calcium									
8. Chromium	1.0	1.004	100	1.0	1.033	103	0.977	98	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.116	112	1.0	1.110	111	1.093	109	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____² Continuing Calibration Source _____³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME _____

CASE NO. 8604009-01, -02A. DATE 5-20-86UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<0.001	<0.001	<0.001			*0.001	
5. Beryllium							
6. Cadmium	<0.002	<0.002	<0.002			<0.002	
7. Calcium							
8. Chromium	<0.005	<0.005	<0.005			<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<0.002	*0.003	<0.002			<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

Form VI

C. C. Report No. _____

DUPLICATES

LAB NAME _____

A. DATE 5-20-86CASE NO. 8604069EPA Sample No. analLab Sample ID No. -01Units ug/l ml

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.058	0.057	1.7
5. Beryllium				
6. Cadmium		<0.002	<0.002	NC
7. Calcium				
8. Chromium		*0.012	*0.013	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		<0.002	<0.002	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* ~~Control Limit~~ * < 5x's the IDL

To be added at a later date.

$$^2 \text{ RPD} = \frac{[(S - D) / (S + D) / 2] \times 100}{1}$$

1 - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5x's the IDL.

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME _____

A. DATE 5-20-86
 CASE NO. 8004069
 EPA Sample No. 050109
 Lab Sample ID No. -02
 Units ug/ml

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.041	0.055	29
5. Beryllium				
6. Cadmium		*0.003	<0.002	NC
7. Calcium				
8. Chromium		*0.005	<0.005	NC
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		*0.007	<0.002	NC
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control

To be added at a later date.

² RPD = $[(S - D) / ((S + D) / 2)] \times 100$ ¹ - Non calculable RPD due to value(s) less than CRDL

QUALITY CONTROL DATA SUMMARY

Compiled 5-29-86

Workorder 8604069

Client Plant 4

Units ug/ml

PARAMETER	ANALYSIS DATE	CALIBRATION		VERIFICATION STDS.			DUPLICATE ANALYSIS			SPIKE RECOVERY				BLANKS	
		FOUND	TRUE	%R	SAMP#	SAMP#	DUPL	RPD	SAMP#	SSR	SR	SA	%R		
O ₂ G	4-21-86	19400	20000	97											
	Sample: -03														
Hg	4-24-86	0.0027	0.0025	108											
	Samples: -01, -02	0.0026	0.0025	104											
		0.0029	0.0025	116											
Pb	5-13-86	0.042	0.043	98	-01A	0.009	0.009	0	-01A	0.032	0.009	0.025	92		
	Samples: -01, -02	0.045	0.043	105	-01P	0.009	0.010	11							
		0.048	0.045	108											
As	5-5-86	0.039	0.040	98	-01A	<0.002	<0.002	NC	-01A	0.030	<0.002	0.025	120		
	Samples: -01, -02	0.039	0.040	98											
		0.044	0.040	110											
		0.043	0.040	108											
		0.045	0.040	113											

RPD = $[(S-D)/(S+D)/2] \times 100$
 RPD = Relative Percent Difference
 NC = Noncalculable

SPIKE %R = $[(SSR-SR)/SA] \times 100$
 * = Value is less than five times the Instrument detection limit
 IDL = Instrument Detection Limit

A = Analytical
 P = Predigestion

QUALITY CONTROL DATA SUMMARY

Completed 5-27-86

Workorder 8604(x)9

Client

Plant 4

Units $\mu\text{g/ml}$ [illegible]
$$RPD = [(S-D) / ((S+D)/2)] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

$$\text{SPIKE \%R} = [(SSR - SR) / SA] \times 100$$

* = Value is less than five times the Instrument detection limit
IDL = Instrument Detection Limit

A = Analytical

P = Prediction

1. Sample diluted 1:10.

SURROGATE RECOVERIES

LAB #: 8001019-CIA/DUP

SAMPLE ID: 800218

DATE: 4-14-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 97.99

★ 2-BROMO-1-CHLOROPROPANE: 76.50

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

★ Interference

SURROGATE RECOVERIES

LAB #: 81004009-08A

SAMPLE ID: 8100219

DATE: 4-14-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 111

★ 2-BROMO-1-CHLOROPROPANE: 100

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

★ Interference

SURROGATE RECOVERIES

LAB #: 8604069-03A

SAMPLE ID: 860220

DATE: 4-14-86

INSTRUMENT: Gamma

601/8010

BROMOCHLOROMETHANE: 139

2-BROMO-1-CHLOROPROPANE: 129

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 81004069-01B

SAMPLE ID: 8100218

DATE: 4-15-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 106

SURROGATE RECOVERIES

LAB #: 8604069-02B/DUP

SAMPLE ID: 860.214

DATE: 4-14-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 100.99

SURROGATE RECOVERIES

LAB #: 81004009-03B

SAMPLE ID: 8100320

DATE: 4-14-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103

3604069-01A
 360213

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane	ND	ND	NC			
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene	✓	✓	✓			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

DUPLICATE ANALYSIS

EPA METHOD 602
VOLATILE ORGANICS

SAMPLE # 3604009-C2B
360314

COMPOUND	RUN#1	RUN#2	RPD
Benzene			
Toluene	11.1	10.4	6.5
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

VOA RESULTS

LAB # _____		SYSTEM CLINIC	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: 4/2/06		DATE: _____	
ANALYST: C		ANALYST: _____	
INSTRUMENT: Thermo		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	N2	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		PERCENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 4/14/78 ANALYST: CO INSTRUMENT: DuPont	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane	-	Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #	
CLIENT NAME	
SAMPLE ID	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)
Chloromethane	Benzene
Bromomethane	Toluene
Vinyl Chloride	Ethyl benzene
Chloroethane	Chlorobenzene
Methylene chloride	1,4-Dichlorobenzene
Trichlorofluoromethane	1,3-Dichlorobenzene
1,1-Dichlorethane	1,2-Dichlorobenzene
1,1-Dichloroethane	P-Xylene
Trans-1,2-Dichloroethane	M-Xylene
Chloroform	O-Xylene
1,2-Dichlorethane	
1,1,1-Trichlorethane	
Carbon tetrachloride	
Bromodichlormethane	
1,2-Dichloropropane	SURROGATE RECOVERIES:
Trans-1,3-Dichloropropene	601
Trichloroethene	Bromochloromethane
Dibromochloromethane	2-Bromo-1-Chloropropane
1,1,2-Trichlorethane	1,4-Dichlorobutane
cis-1,3-Dichloropropene	602
2-Chloroethylvinyl ether	a,a,a,-Trifluorotoluene
Bromoform	
1,1,2,2-Tetrachlorethane	
Tetrachlorethylene	
Chlorobenzene	
1,3-Dichlorobenzene	
1,2-Dichlorobenzene	
1,4-Dichlorobenzene	

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____		DATE: _____	
EPA METHOD 601		EPA METHOD 602	
ANALYST: _____		ANALYST: _____	
INSTRUMENT: _____		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>4/14/86</u> ANALYST: <u>CP</u> INSTRUMENT: <u>Nal</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>PERCENT BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD	DATE:	EPA METHOD	DATE: <u>4/14/86</u>
601	ANALYST:	602	ANALYST: <u>C</u>
	INSTRUMENT:		INSTRUMENT: <u>Delta</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>N2</u>
Bromomethane		Toluene	<u>1</u>
Vinyl Chloride		Ethyl benzene	<u>1</u>
Chloroethane		Chlorobenzene	<u>1</u>
Methylene chloride		1,4-Dichlorobenzene	<u>1</u>
Trichlorofluoromethane		1,3-Dichlorobenzene	<u>1</u>
1,1-Dichloroethene		1,2-Dichlorobenzene	<u>1</u>
1,1-Dichloroethane		P-Xylene	<u>1</u>
Trans-1,2-Dichloroethene		M-Xylene	<u>1</u>
Chloroform		O-Xylene	<u>1</u>
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:	
601	
	Bromochloromethane _____
	2-Bromo-1-Chloropropane _____
	1,4-Dichlorobutane _____
602	
	a,a,a,-Trifluorotoluene _____

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/14/76	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2	10.0	108			
	1,1-Dichloroethylene	10.0	8.5	85			
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0	64.1	149			
	1,2-Dichloroethane	27.6	23.0	83			
	1,1,1-Trichloroethane	14.3	13.3	93			
	Carbon Tetrachloride	20.0	17.2	86			
	Bromodichloromethane	7.9	8.4	107			
	1,2-Dichloropropane	8.0	7.7	97			
	Trichloroethene	22.2	22.3	100			
	Dibromochloromethane	16.7	15.5	93			
	Bromoform	9.9	10.3	104			
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2	9.5	116			
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7				30.8	107
	Toluene	4.1				3.8	93
	Ethylbenzene	11.5				10.4	90
	P-Xylene	19.1				19.3	101
	M-Xylene	42.6				44.3	104
	O-Xylene	10.6				9.8	93
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/15/86		SPIKED VALUE (ug/L)	Analyzed Value	Z Recovery		Analyzed Value	Z Recovery
		INSTRUMENT		D	D		G	G
TEST METHOD EPA 601	COMPOUND EPA WP 483 CONC. 2 AND WP 781 CONC. 3							
	Methylene Chloride		9.2				10.7	116
	1,1-Dichloroethylene		10.0				10.3	103
	Trans-1,2-Dichloroethylene		5.4					
	Chloroform		43.0				64.2	149
	1,2-Dichloroethane		27.6				25.9	94
	1,1,1-Trichloroethane		14.3				15.9	111
	Carbon Tetrachloride		20.0				21.3	107
	Bromodichloromethane		7.9				9.8	124
	1,2-Dichloropropane		8.0				8.8	110
	Trichloroethene		22.2				24.2	109
	Dibromochloromethane		16.7				15.5	93
	Bromoform		9.9				11.7	118
	1,1,2,2-Tetrachloroethane		10.0					
	Tetrachloroethene		6.2					
	Chlorobenzene		8.2				10.5	128
EPA 602	EPA - WP 879 CONC. 1							
	Benzene		30.7	30.2	98			
	Toluene		4.1	3.8	93			
	Ethylbenzene		11.5	9.9	86			
	P-Xylene		19.1	17.8	93			
	M-Xylene		42.6	40.7	96			
	O-Xylene		10.6	9.2	86			
EPA 608			(ug/g)					
	Aroclor 1242		58.7					
	Aroclor 1260		56.8					

RAS - SAC

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address LIS Air Force Plant 4

Sample Point Description Radar Range

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. Hise / W. Johnson Date/Time Sampled 4/10/86

Amount of Sample Collected 3 - 1L glass

Sample Description Groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By W. Johnson Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 4/10/86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

Metals - 860221, 860222, 860223

Chromium - 860224

HC Fuels - 860222, 860226

Oil & Grease - 86022

Field Blank -

860223

CHAIN OF CUSTODY RECORD

601 - 860221, 860224, 860222, 860223

602 - 860221, 860224, 860222, 860223

Trp Blank

Field Sample No. _____

Company Sampled/Address _____

Plant 4 General

Sample Point Description Groundwater

Dynamics

Stream Characteristics:

Temperature _____

Flow _____

pH _____

Visual Observations/Comments _____

Collector's Name W. Johnson / W. Hise Date/Time Sampled 4/10/86, 4/11/86

Amount of Sample Collected 20 - 40 ml glass, 4 - 500 ml plastic, 3 - mason jars

Sample Description groundwater

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 86-022-057

Comments _____

Inclusive Dates of Possession 4/11/86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME _____

CASE NO. 8604084-01A-04

SOW NO. _____

A. DATE 5-20-86UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	XR	True Value	Found	XR	Found	XR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	0.999	100	1.0	1.022	102	0.998	100	P
5. Beryllium									
6. Cadmium	1.0	1.007	101	1.0	1.033	103	1.004	100	P
7. Calcium									
8. Chromium	1.0	1.004	100	1.0	1.033	103	0.977	98	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.116	112	1.0	1.110	111	1.093	109	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME _____

CASE NO. 86CH084-01-04A. DATE 5-30-86UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<0.001	<0.001	<0.001			<0.001	
5. Beryllium							
6. Cadmium	<0.002	<0.002	<0.002			<0.002	
7. Calcium							
8. Chromium	<0.005	<0.005	<0.005			<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<0.002	<0.002	<0.002			<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME _____

A. DATE 5-20-86
 CASE NO. 8600484
 EPA Sample No. 070019
 Lab Sample ID No. -139
 Units ug/ml

Matrix _____

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	"				
3. Arsenic	"				
4. Barium	"	1.863	0.093	2.0	89
5. Beryllium	"				
6. Cadmium	"	0.036	*0.003	0.05	66
7. Calcium	"				
8. Chromium	"	0.184	*0.015	0.2	85
9. Cobalt	"				
10. Copper	"				
11. Iron	"				
12. Lead	"				
13. Magnesium	"				
14. Manganese	"				
15. Mercury	"				
16. Nickel	"				
17. Potassium	"				
18. Selenium	"				
19. Silver	"	0.221	0.011	0.25	84
20. Sodium	"				
21. Thallium	"				
22. Tin	"				
23. Vanadium	"				
24. Zinc	"				
Other: _____					
Cyanide					

¹ ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: _____

QUALITY CONTROL DATA SUMMARY

Compiled 5-29-86

Workorder 8604084

Client Plant 4

Units ug/ml

PARAMETER	ANALYSIS DATE	CALIBRATION			DUPLICATE ANALYSIS			SPIKE RECOVERY			BLANKS			
		FOUND	TRUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SSR		SR	SA	%R
OEG	4-21-86 sample: -02	19400	20000	97										
Hg	4-24-86 Samples: -02,-03	0.0027	0.0025	108										P 40.0002
		0.0026	0.0025	104										P 40.0002
		0.0029	0.0025	116										P 40.0002
As	5-5-86 Samples: -01,-02,-03	0.039	0.040	98					-01A	0.028	40.02	0.025	112	
		0.043	0.040	108					-02P	0.022	40.002	0.030	110	
		0.045	0.040	113										
Pb	5-13-86 Samples: -01,-02,-03	0.042	0.043	98	-01A	0.032	0.024	8.7	-01A	0.049	0.032	0.025	108	
		0.048	0.043	112										
		0.045	0.043	107										

$$RPD = [(S-D)/((S+D)/2)] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

$$SPIKE \%R = [(SSR-SR)/SA] \times 100$$

* = Value is less than five times

the instrument detection limit

IDL = Instrument Detection Limit

A = Analytical

P = Predigestion

4. sample diluted 1:10.

QUALITY CONTROL DATA SUMMARY

Compiled 5-29-86

Workorder 8604084

Client Plant 4

Units: 1000000

[illegible]
$$RPD = [(S-D) / ((S+D)/2)] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

$$\text{SPIKE \%R} = [(SSR - SR) / SA] \times 100$$

* = Value is less than five times the instrument detection limit

IDL = Instrument Detection Limit

A = Analytical

P = Predigestion

7. sample diluted 1:10.

SURROGATE RECOVERIES

LAB #: 86004084-01A

SAMPLE ID: 8600221

DATE: 4-15-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 98

★ 2-BROMO-1-CHLOROPROPANE: 78

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

★ Interference

SURROGATE RECOVERIES

LAB #: 81004084-0.2A

SAMPLE ID: 860.772

DATE: 4-14-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 103

2-BROMO-1-CHLOROPROPANE: 119

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 860408403A/DUP

SAMPLE ID: 860223

DATE: 4-15-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 105, 113

2-BROMO-1-CHLOROPROPANE: 114, 132

602/8020

a, a, a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8604084-04A

SAMPLE ID: 860224

DATE: 4-15-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 119

2-BROMO-1-CHLOROPROPANE: 137

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8604087-00A

SAMPLE ID: Field Blank

DATE: 4-15-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 109

2-BROMO-1-CHLOROPROPANE: 109

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 8604084-07A

SAMPLE ID: Trip Blank

DATE: 4-15-86

INSTRUMENT: Germaine

601/8010

BROMOCHLOROMETHANE: 103

2-BROMO-1-CHLOROPROPANE: 118

602/8020

a,a,a-TRIFLUOROTOLUENE: _____

SURROGATE RECOVERIES

LAB #: 86004084-01B

SAMPLE ID: 8600221

DATE: 4-14-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 1000

SURROGATE RECOVERIES

LAB #: 7604084-02B

SAMPLE ID: 860322

DATE: 4-14-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103

SURROGATE RECOVERIES

LAB #: 8604084-03B

SAMPLE ID: 860223

DATE: 4-15-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 93

SURROGATE RECOVERIES

LAB #: 8004084-04B

SAMPLE ID: 800224

DATE: 4-15-84

INSTRUMENT: DELTA 15

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 106

SURROGATE RECOVERIES

LAB #: 86041084-06B

SAMPLE ID: Field Blank

DATE: 4-15-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a, a, a-TRIFLUOROTOLUENE: 99

SURROGATE RECOVERIES

LAB #: 8604084-07B

SAMPLE ID: Trip Blank

DATE: 4-15-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 103

RADIAN
CORPORATION

8604084-03A

860223

DUPLICATE ANALYSIS

EPA Method 601 Volatile Organics						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride	20.4	⊕	NC			
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene	338	303	30.7			
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroethane						
1,2-Dichloropropane						
Trichloroethene	40.3	50.5	8.7			
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene		6	373			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

⊕ Present but integration problems
@ Did not conform by 3rd column.

SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	80484 - OYA Purity 1.500 860225 4/15/86 Sp R _p <i>[Signature]</i>							
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	6.2		9.2	68				
Trichlorofluoromethane								
1,1-Dichloroethene	5.0A		10.0	51				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	4.4	2548	5.4	81 ⁰				
Chloroform	55.3		43.0	129				
1,2-Dichloroethane	19.9		27.6	72				
1,1,1-Trichloroethane	12.7		14.3	88				
Carbon Tetrachloride	17.3		20.0	87				
Bromodichloromethane	8.0		7.9	101				
1,2-Dichloropropane	7.0		8.0	87				
Trichloroethene	34.5	5508	22.2	155 ⁰				
Dibromochloromethane	10.4		16.7	63				
1,1,2-Trichloroethane			4.					
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	11.7		9.9	118				
1,1,2,2-Tetrachlorethane			10.0					
Tetrachlorethylene			6.2					
Chlorobenzene	7.62		8.2	93				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

0 Purity found in sample already substantiated.

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

6 374

SPIKE RECOVERY

EPA Method 602
Volatile Organics

4/14/26
RP
Delrin

SAMPLE # 8604284-02B

UNITS Plant 4 860222
Sp

COMPOUND	SSR	SR	SA	ZR
Benzene	39.0	1.34	30.7	123
Toluene	5.94	0.74	4.1	127
Ethyl benzene	13.2		11.5	115
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene	12.2		10.6	115
M-Xylene	53.4		42.6	125
P-Xylene	23.7		19.1	124
Chlorobenzene				

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 4/15/82 ANALYST: CP INSTRUMENT: Nal
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	NB
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		CLIENT NAME _____		SAMPLE ID _____	
EPA METHOD 601		DATE: ANALYST: INSTRUMENT:		EPA METHOD 602	
COMPOUND		CONCENTRATION (ug/L)		COMPOUND	
Chloromethane		Benzene			
Bromomethane		Toluene			
Vinyl Chloride		Ethyl benzene			
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichloroethene		1,2-Dichlorobenzene			
1,1-Dichloroethane		P-Xylene			
Trans-1,2-Dichloroethene		M-Xylene			
Chloroform		O-Xylene			
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon tetrachloride					
Bromodichloromethane					
1,2-Dichloropropane					
Trans-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichloroethane					
cis-1,3-Dichloropropene					
2-Chloroethylvinyl ether					
Bromoform					
1,1,2,2-Tetrachloroethane					
Tetrachloroethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					

VOA RESULTS

LAB # <u>5757-01 BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>4/15/06</u> ANALYST: <u>CP</u> INSTRUMENT: <u>Agilent</u>	EPA METHOD 602	DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N2</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>URGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>4/15/86</u> ANALYST: <u>C</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N/D</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane	
Trichloroethene		2-Bromo-1-Chloropropane	
Dibromochloromethane		1,4-Dichlorobutane	
1,1,2-Trichlorethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		CLIENT NAME	
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichlorethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

AD-R198 446

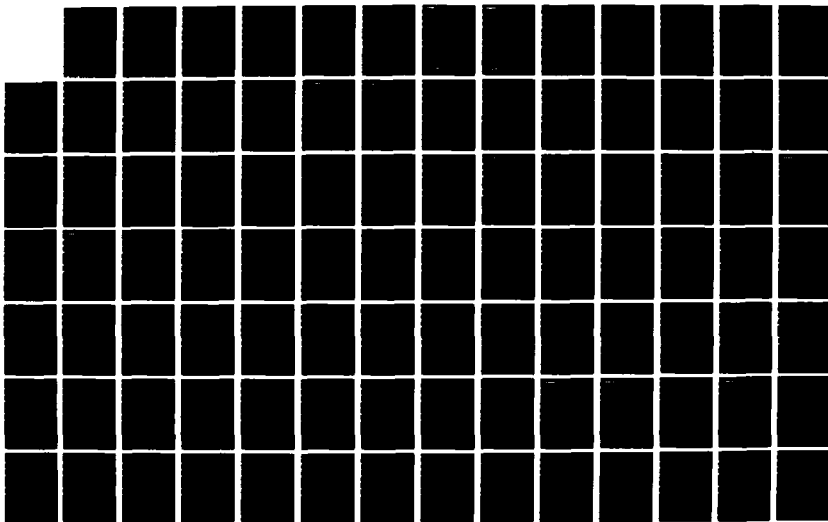
INSTALLATION RESTORTION PROGRAM PHASE 2
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4881

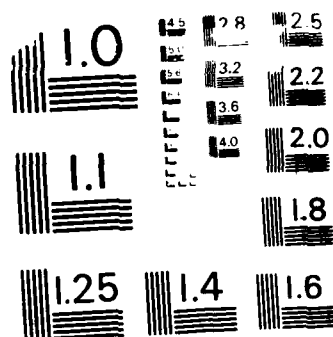
5/6

UNCLASSIFIED

F/G 24/7

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1983-A

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____		DATE: _____	
EPA METHOD 601		ANALYST: _____	
DATE: 4/14/82		INSTRUMENT: _____	
COMPOUND		CONCENTRATION (ug/L)	
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
-----		-----	
EPA METHOD	DATE:	EPA METHOD	DATE:
601	ANALYST:	602	4/14/96
	INSTRUMENT:		ANALYST: C
			INSTRUMENT: 201
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>11-00000000</u>			
CLIENT NAME <u></u>			
SAMPLE ID <u></u>			
-----		-----	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>4/1/06</u> ANALYST: <u>4</u> INSTRUMENT: <u>Del</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		<u>Benzene</u>	<u>ND</u>
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichloroethene</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichloroethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichloromethane</u>			
<u>1,2-Dichloropropane</u>			
<u>Trans-1,3-Dichloropropene</u>			
<u>Trichloroethene</u>			
<u>Dibromochloromethane</u>			
<u>1,1,2-Trichloroethane</u>			
<u>cis-1,3-Dichloropropene</u>			
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachloroethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

SURROGATE RECOVERIES:	
601	
	<u>Bromochloromethane</u>
	<u>2-Bromo-1-Chloropropane</u>
	<u>1,4-Dichlorobutane</u>
602	
	<u>a,a,a,-Trifluorotoluene</u>

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/14/76		SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
		INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND							
EPA 601	EPA WP 483 CONC. 2							
	AND WP 781 CONC. 3							
	Methylene Chloride		9.2	10.0	108			
	1,1-Dichloroethylene		10.0	8.5	85			
	Trans-1,2-Dichloroethylene		5.4					
	Chloroform		43.0	64.1	149			
	1,2-Dichloroethane		27.6	23.0	83			
	1,1,1-Trichloroethane		14.3	13.3	93			
	Carbon Tetrachloride		20.0	17.2	86			
	Bromodichloromethane		7.9	8.4	107			
	1,2-Dichloropropane		8.0	7.7	97			
	Trichloroethene		22.2	22.3	100			
	Dibromochloromethane		16.7	15.5	93			
	Bromoform		9.9	10.3	104			
	1,1,1,2,2-Tetrachloroethane		10.0					
	Tetrachloroethene		6.2					
	Chlorobenzene		8.2	9.5	116			
EPA 602	EPA - WP 879 CONC. 1							
	Benzene		30.7			32.8	107	
	Toluene		4.1			5.8	93	
	Ethylbenzene		11.5			10.4	90	
	P-Xylene		19.1			19.3	101	
	M-Xylene		42.6			44.3	104	
	O-Xylene		10.6			9.8	93	
EPA 608			(ug/g)					
	Aroclor 1242		58.7					
	Aroclor 1260		56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/15/86		SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
		INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND							
EPA 601	EPA WP 483 CONC. 2							
	AND WP 781 CONC. 3							
	Methylene Chloride		9.2				10.7	116
	1,1-Dichloroethylene		10.0				10.3	103
	Trans-1,2-Dichloroethylene		5.4					
	Chloroform		43.0				64.2	149
	1,2-Dichloroethane		27.6				25.9	94
	1,1,1-Trichloroethane		14.3				15.9	111
	Carbon Tetrachloride		20.0				21.3	107
	Bromodichloromethane		7.9				9.8	124
	1,2-Dichloropropane		8.0				8.8	110
	Trichloroethene		22.2				24.2	109
	Dibromochloromethane		16.7				15.5	93
	Bromoform		9.9				11.7	118
	1,1,2,2-Tetrachloroethane		10.0					
	Tetrachloroethene		6.2					
	Chlorobenzene		8.2				10.5	128
EPA 602	EPA - WP 879 CONC. 1							
	Benzene		30.7	30.2	98			
	Toluene		4.1	3.8	93			
	Ethylbenzene		11.5	9.9	86			
	P-Xylene		19.1	17.8	93			
	M-Xylene		42.6	40.7	96			
	O-Xylene		10.6	9.2	86			
EPA 608			(ug/g)					
	Aroclor 1242		58.7					
	Aroclor 1260		56.8					

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address Plant 4 General Dynamics
Sample Point Description Ground water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name W. Johnson / W. Hise Date/Time Sampled 4/10/86Amount of Sample Collected 4 - 1L glassSample Description GroundwaterStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)☐ Non-hazardous sample☒ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☒ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 24 041-0285

Comments _____

Inclusive Dates of Possession 4/11/86Organization Name Radian Analytical ServicesReceived By Ramsey Date Received 4-12-86 Time 0930Transported By Federal 736761401 Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 4-12-86

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

 P-23
 HM-101

Field Sample No. _____

 Company Sampled/Address General Dynamics Plant 4

 Sample Point Description P-23, HM-101

Stream Characteristics:

 Temperature _____ Flow _____ pH 6-7

Visual Observations/Comments _____

 Collector's Name TKW Date/Time Sampled 4-18-86

Amount of Sample Collected _____

 Sample Description 4 1 Liter amber glass, 4 1 Liter plastic, 12 40 ml wa-vial

 Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

 Other Instructions - Special Handling - Hazards potentially hazardous
Analyze for Metals, EPA 601, 602, 625 compounds
Analyze trip blanks (2) for 601 & 602
☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

 Organization Name RAS

 Received By John M. Madsen Date Received 4-22-86 Time 0900

 Transported By TKW Lab Sample No. 86-041-030

 Comments 2 liters to SAC for 625

Inclusive Dates of Possession _____

 Organization Name Radian Analytical Services

 Received By Chris Karmann Date Received 4-23-86 Time 0930

 Transported By Federal Lab Sample No. _____

 Comments rec'd one P-23 (OEHL 860225) 1L; one HM-101 (OEHL 860225) 1L.

 Inclusive Dates of Possession only one copy c-c present

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME

Radian

CASE NO.

8604164-01

-90M NO.

Plant 4

A. DATE

5-29-86 (analysis date)

UNITS

µg/ml

Compound

Initial Calib.¹Continuing Calibration²

Metals:

	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	1.024	102	1.0	1.048	105	1.052	115	P
5. Beryllium									
6. Cadmium	1.0	1.000	100	1.0	1.030	103	1.032	103	P
7. Calcium									
8. Chromium	1.0	1.017	102	1.0	1.056	115	1.050	115	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.186	112	1.0	1.135	114	1.146	115	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source SPEX² Continuing Calibration Source W.M.L.³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 85-115⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME RadiumCASE NO. 8604164-01A. DATE 5-29-86UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				1	2
		1	2	3	4		
Metals:						6610	
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	*0.001	*0.001	40.001			40.001	
5. Beryllium							
6. Cadmium	40.002	40.002	40.002			40.002	
7. Calcium							
8. Chromium	40.005	40.005	40.005			40.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	*0.004	*0.003	*0.003			40.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* - < 5x2 Hk INL

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME Radian

A. DATE 5-29-86

CASE NO. 8604104

EPN Sample No. digestion

Lab Sample ID No. LOI

Units ug/ml

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.061	0.059	3.3
5. Beryllium				
6. Cadmium		40.002	40.002	NC
7. Calcium				
8. Chromium		*0.016	*0.013	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.010	*0.009	NC1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control < 5x24hr IDL.

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5x24hr IDL.

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME RadianCASE NO. 8604164EPA Sample No. -C1Lab Sample ID No. analyticalUnits ug/mlA DATE 5-29-86

Matrix

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:	ND < 30			
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.061	0.062	0.30
5. Beryllium				
6. Cadmium		0.002	0.003	NC
7. Calcium				
8. Chromium		X0.016	X0.018	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.010	0.013	0.36.1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control $< 5 \times$ the IDL

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDLNC1 - not calculable due to values $< 5 \times$ the IDL.

B - 12

* High RPD due to values being close to the IDL.

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Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³LAB NAME RadianCASE NO. 8604164-02 dtd 1:10CONV. NO. PVant 4A. DATE 6-2-86UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	IR	True Value	Found	IR	Found	IR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	1.015	102	1.0	1.016	102			P
5. Beryllium									
6. Cadmium	1.0	0.998	100	1.0	1.013	101			P
7. Calcium									
8. Chromium	1.0	1.012	101	1.0	1.025	103			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.114	111	1.0	1.124	112			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source SLX² Continuing Calibration Source ANAL³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 85-115⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME RadianCASE NO. 8004104-02 div 1A DATE 6-3-86UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	40.001	40.001				40.001	
5. Beryllium							
6. Cadmium	40.002	40.002				40.002	
7. Calcium							
8. Chromium	40.005	40.005				40.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	40.002	40.002				40.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* - 1500 hr IDL.

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME RadianA- DATE 6-2-86CASE NO. 8604164-02 dil 1:10
EPA Sample No. unlabeled
Lab Sample ID No. -02
Units ug/ml

Matrix

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:	RPD < 20			
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.257	0.353	LL
5. Beryllium				
6. Cadmium		0.02	0.02	NC
7. Calcium				
8. Chromium		*0.247	*0.247	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.129	0.121	LL
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control < 5 x's the IDL.

To be added at a later date.

$$^2 \text{ RPD} = [|S - D| / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5 x's the IDL

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME RadianA. DATE 6-2-86CASE NO. 8604164-C2 dilEPA Sample No. 4004107Lab Sample ID No. 412Units ug/ml

Matrix _____

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	3.142	0.257	2.0	94
5. Beryllium	-				
6. Cadmium	-	40.02	40.020	0.05	0
7. Calcium	-				
8. Chromium	-	0.437	*0.247	0.2	95
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.279	0.129	0.25	100
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

¹ ZR = [(SSR - SR)/SA] x 100 * - 0.5X0.442 IOL.

"Z" - out of control

Comments: _____

QUALITY CONTROL DATA SUMMARY

Compiled 10-24-86

Workorder 86041164

Client Plant 4

Units ug/l

PARAMETER	ANALYSIS DATE	CALIBRATION			DUPLICATE ANALYSIS				SPIKE RECOVERY				BLANKS * P 0.003 A 0.002	
		FOUND	TRUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SSR	SR	SA		%R
Pb samples -01-02 IDL=0.003 (E. furnace)	5-23-86	0.045	0.043	105					-01A	0.108	0.033	0.10	85	
		0.043	0.043	100										
As samples -01-02 IDL=0.002 (E. furnace)	5-19-86	0.027	0.027	100					-01A	0.037	0.015	0.025	88	P 0.002
		0.024	0.027	89										
		0.026	0.027	96										
Se samples -01-02 IDL=0.003 (E. furnace)	5-20-86	0.048	0.050	96					-01A	-deducted 110-- 0.19	0.03	0.25	76	R 0.003 A 0.003 P 0.003 A 0.003 P 0.003
		0.047	0.050	94										
		0.048	0.050	96										
Hg samples -01-02 IDL=0.0002 (Cold vapor)	5-14-86	0.053	0.05	104					-02P	0.024	0.002	0.002	120	P 0.002

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$$RPD = [(S-D)/((S+D)/2)] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

$$SPIKE \%R = [(SSR-SR)/SA] \times 100$$

* = Value is less than five times

the instrument detection limit

A = Analytical

P = Predigestion

the instrument detection limit

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/20/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2				8.8	95
	1,1-Dichloroethylene	10.0				8.6	86
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				61.2	142
	1,2-Dichloroethane	27.6				23.0	83
	1,1,1-Trichloroethane	14.3				15.7	110
	Carbon Tetrachloride	20.0				19.7	99
	Bromodichloromethane	7.9				8.7	110
	1,2-Dichloropropane	8.0				6.6	83
	Trichloroethene	22.2				21.1	95
	Dibromochloromethane	16.7				14.0	84
	Bromoform	9.9				10.7	108
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2				7.6	93
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	39.2	127			
	Toluene	4.1	4.7	113			
	Ethylbenzene	11.5	12.0	105			
	P-Xylene	19.1	21.7	114			
	M-Xylene	42.6	50.5	119			
	O-Xylene	10.6	11.5	109			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

SURROGATE RECOVERIES

LAB #: 8604164-03C dup.

SAMPLE ID: 860228

DATE: 4-28-86

INSTRUMENT: Perkin

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 100

DUPLICATE ANALYSIS

<div> <div>METHOD 602</div> <div>VOLATILE ORGANICS</div> </div> <div> <div>8604164-02C</div> <div>860228</div> </div>			
COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND	ND	NC
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
Chlorobenzene	↓	↓	↓
M-Xylene			
P-Xylene			
O-Xylene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 4/28/76 ANALYST: C. INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	No	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichloroethene</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloroethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichloroethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachloroethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>PERCENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		DATE: <u>4/28/86</u>	EPA METHOD 602
		ANALYST: <u>ci</u>	DATE: _____
		INSTRUMENT: <u>Hammer</u>	ANALYST: _____
			INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>NP</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 7/28/92 ANALYST: G INSTRUMENT: QD
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		Benzene	N2
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichlorethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>REAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
-----		-----	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>4/4/76</u> ANALYST: <u>ci</u> INSTRUMENT: <u>Q2</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			
		SURROGATE RECOVERIES:	
		601	
			Bromochloromethane _____
			2-Bromo-1-Chloropropane _____
			1,4-Dichlorobutane _____
		602	
			a,a,a,-Trifluorotoluene _____

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME Radian

CASE NO. 8604164-01

CON. NO. Plant 4

A. DATE 5-29-86 (analysis date)

UNITS µg/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	ER	True Value	Found	ER	Found	ER	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	1.024	102	1.0	1.048	105	1.052	105	P
5. Beryllium									
6. Cadmium	1.0	1.000	100	1.0	1.130	113	1.032	103	P
7. Calcium									
8. Chromium	1.0	1.017	102	1.0	1.050	105	1.050	105	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.120	112	1.0	1.135	114	1.140	115	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source SPEX

² Continuing Calibration Source IRML

³ Control Limits: Mercury and Tin. 80-120; All Other Compounds 85-115

⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME RadianCASE NO. 8604164-01A. DATE 5-29-86UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:						6610	
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	*0.001	*0.001	40.001			40.001	
5. Beryllium							
6. Cadmium	40.002	40.002	40.002			40.002	
7. Calcium							
8. Chromium	40.005	40.005	40.005			40.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	*0.004	*0.003	*0.003			40.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* - < 5x2 Hk IDL

Form VI
Q. C. Report No. _____
DUPLICATES

LAB NAME Padian
A. DATE 5-29-86

CASE NO. 8604164
SPN Sample No. diap/471
Lab Sample ID No. 261
Units ug/ml

Matrix

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.061	0.059	33
5. Beryllium				
6. Cadmium		40.002	40.002	NC
7. Calcium				
8. Chromium		*0.016	*0.013	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.010	*0.009	NC1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control < 5x2 1/2 IOL.

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

¹ - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5x2 1/2 IOL.

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME RadianCASE NO. 8604164A DATE 5-29-86EPA Sample No. -C1
Lab Sample ID No. analytical
Units ug/ml

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:	RD < 90			
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.061	0.062	0.30
5. Beryllium				
6. Cadmium		<0.002	<0.002	NC
7. Calcium				
8. Chromium		*0.016	*0.018	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.010	0.013	76.1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control < 5x's the IDL

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

1 - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5x's the IDL.

B - 12

* High RPD due to values being close to the IDL.

6 407

Form II

Q. C. Report No. _____

INITIAL AND CONTINUING CALIBRATION VERIFICATION³LAB NAME RadianCASE NO. 8604104-02 dw 1:10SOW NO. Plant 4A. DATE 6-28-86UNITS ug/ml

Compound	Initial Calib. ¹			Continuing Calibration ²					Method ⁴
	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.0	1.015	102	1.0	1.016	102			P
5. Beryllium									
6. Cadmium	1.0	0.998	100	1.0	1.013	101			P
7. Calcium									
8. Chromium	1.0	1.012	101	1.0	1.025	103			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.0	1.114	111	1.0	1.124	112			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

¹ Initial Calibration Source SLX² Continuing Calibration Source MX³ Control Limits: Mercury and Tin: 80-120; All Other Compounds 85-115⁴ Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form III

Q. C. Report No. _____

BLANKS

LAB NAME Radian
A DATE 10-2-86CASE NO. 8604104-02 dil 1:1
UNITS ug/ml

Matrix _____

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	40.001	40.001				40.001	
5. Beryllium							
6. Cadmium	40.002	40.002				40.002	
7. Calcium							
8. Chromium	40.005	40.005				40.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	40.002	40.005				40.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

* - 1500 hr IDL.

Form VI

Q. C. Report No. _____

DUPLICATES

LAB NAME RadianA. DATE 6-2-86CASE NO. 860411-4-02 dlt 1:10EPA Sample No. AnalyticalLab Sample ID No. 02Units ug/ml

Matrix

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD-
Metals:	RPD < 20			
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.257	0.253	6.6
5. Beryllium				
6. Cadmium		0.02	0.02	NC
7. Calcium				
8. Chromium		*0.247	*0.242	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.129	0.121	6.4
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

* Out of Control < 5 x IDL.

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S - D)^2)] \times 100$$

1 - Non calculable RPD due to value(s) less than CRDL

NC1 - not calculable due to values < 5 x IDL

Form V

Q. C. Report No. _____

SPIKE SAMPLE RECOVERY

LAB NAME RadianA. DATE 6-2-86CASE NO. 8004104-12.dil:10EPA Sample No. 00514100Lab Sample ID No. 212Units 191/ml

Matrix _____

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	2.142	0.257	2.0	94
5. Beryllium	-				
6. Cadmium	-	40.07	40.020	0.05	0 R
7. Calcium	-				
8. Chromium	-	0.437	*0.247	0.2	95
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.279	0.139	0.25	100 R
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide					

¹ ZR = [(SSR - SR)/SA] x 100 * - 65% ± 4% TOL.

"R" - out of control

Comments: _____

QUALITY CONTROL DATA SUMMARY

Completed 10-24-86

Workorder 8604114

Client Plant 4

Units ug/mol

PARAMETER	ANALYSIS DATE	CALIBRATION			DUPLICATE ANALYSIS				SPIKE RECOVERY					BLANKS * P 0.003 A 0.002
		FOUND	TRUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SSR	SR	SA	%R	
Pb samples -01-02 IDL=0.003 (E. furnace)	5-23-86	0.045	0.043	105					-01A	0.108	0.033	0.10	85	
		0.043	0.043	100										
As samples -01-02 IDL=0.002 (E. furnace)	5-19-86	0.027	0.027	100					-01A	0.037	0.015	0.025	88	P 0.002
		0.024	0.027	89										
		0.026	0.027	96										
Se samples -01-02 IDL=0.003 (E. furnace)	5-20-86	0.048	0.050	96					-01A	0.19	0.03	0.25	76	P 0.003 A 0.003 P 0.003 A 0.003 P 0.003
		0.047	0.05	94										
		0.048	0.050	96										
Hg samples -01-02 IDL=0.0003 (Cold vapor)	5-14-86	0.053	0.05	104					-02P	0.024	0.002	0.023	120	P 0.0003

CP RPD = $[(1/S-D)/((S+D)/2)] \times 100$

RPD = Relative Percent Difference

NC = Noncalculable

NC1 = Noncalculable due to values < 5x's the IDL

SPIKE %R = $[(SSR-SR)/SA] \times 100$

* = Value is less than five times the Instrument detection limit

IDL = Instrument Detection Limit

A = Analytical

P = Predigestion

R = Recovery not within the control limits

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	4/20/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2				8.8	95
	1,1-Dichloroethylene	10.0				8.6	86
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				61.2	142
	1,2-Dichloroethane	27.6				23.0	83
	1,1,1-Trichloroethane	14.3				15.7	110
	Carbon Tetrachloride	20.0				19.7	99
	Bromodichloromethane	7.9				8.7	110
	1,2-Dichloropropane	8.0				6.6	83
	Trichloroethene	22.2				21.1	95
	Dibromochloromethane	16.7				14.0	84
	Bromoform	9.9				10.7	108
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2				7.6	93
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	39.2	127			
	Toluene	4.1	4.7	113			
	Ethylbenzene	11.5	12.0	105			
	P-Xylene	19.1	21.7	114			
	M-Xylene	42.6	50.5	119			
	O-Xylene	10.6	11.5	109			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

SURROGATE RECOVERIES

LAB #: 8604164-02C dup

SAMPLE ID: 860228

DATE: 4-28-86

INSTRUMENT: Deloris

601/8010

BROMOCHLOROMETHANE: _____

2-BROMO-1-CHLOROPROPANE: _____

602/8020

a,a,a-TRIFLUOROTOLUENE: 100

DUPLICATE ANALYSIS

<div> <div>METHOD 602</div> <div>8604164-02C</div> <div>860228</div> </div>			
VOLATILE ORGANICS			
COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND	ND	NC
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
Chlorobenzene	↓	↓	↓
M-Xylene			
P-Xylene			
O-Xylene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 4/28/76 ANALYST: C. Duran INSTRUMENT: Duran	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	No	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>PLER GENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: <u>4/28/86</u> ANALYST: <u>ci</u> INSTRUMENT: <u>Yaman</u>	EPA METHOD 602	DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>NP</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		SURROGATE RECOVERIES: 601 Bromochloromethane _____ 2-Bromo-1-Chloropropane _____ 1,4-Dichlorobutane _____ 602 a,a,a,-Trifluorotoluene _____	
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 4/25/82 ANALYST: G INSTRUMENT: QO
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylenes			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		REAGENT BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 4/2/86 ANALYST: CJ INSTRUMENT: OLS
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		<u>Benzene</u>	
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>			
<u>Trans-1,3-Dichloropropene</u>			
<u>Trichloroethene</u>			
<u>Dibromochloromethane</u>			
<u>1,1,2-Trichlorethane</u>			
<u>cis-1,3-Dichloropropene</u>			
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			
		SURROGATE RECOVERIES:	
		601	
		Bromochloromethane	
		2-Bromo-1-Chloropropane	
		1,4-Dichlorobutane	
		602	
		a,a,a,-Trifluorotoluene	

Austin

RADIAN
CORPORATION

860229 - 0-6, HC Fuels

860230 - " "

CHAIN OF CUSTODY RECORD

860229

Field Sample No. 860230

Company Sampled/Address AF PLANT 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 8/19/82

Amount of Sample Collected 4 mason jars

Sample Description groundwater

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp.

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 8/19/82

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Submitted 8-27-86
Completed LAH 8-27-86
Workorder 8608078

Client Plant 4

Units sq. ft.

[illegible]

$RPD = [(S-D)/((S+D)/2)] \times 100$
 $RPD = \text{Relative Percent Difference}$
 $NC = \text{Not calculable due to a value less than five times the IDL}$

$\text{SPIKE } \%R = [(\text{SSR-SR})/\text{SA}] \times 100$
 * = Value is less than five times the instrument detection limit
 IDL = Instrument Detection Limit

A = Analytical
P = Predigestion
SSR = Spiked Sample Result
SR = Sample Result
SA = Spiked Added



field blanks dup - 860754
860750-755: 0+6, HCFuels, 604, 602

860753
860757
860755
860752
860750

CHAIN OF CUSTODY RECORD

Field Sample No. 860750

Company Sampled/Address Plant 4

Sample Point Description Surface water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Gary Henderson Date/Time Sampled 8/20/84

Amount of Sample Collected 22 Vials, 12 mason jars

Sample Description Surface Water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 8608012

Comments _____

Inclusive Dates of Possession 8/20 - 8/21/84

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 8/24/76 ANALYST: C INSTRUMENT: Hummer	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	N2	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>URGENT DUANE</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/26/86</u> ANALYST: <u>C</u> INSTRUMENT: <u>Hermine</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane _____	
Trichloroethene		2-Bromo-1-Chloropropane _____	
Dibromochloromethane		1,4-Dichlorobutane _____	
1,1,2-Trichloroethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene _____	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		CLIENT NAME	
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethane		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>REAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/25/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>DJL</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>NH</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTON Bunk</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/25/91</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane	
Trichloroethene		2-Bromo-1-Chloropropane	
Dibromochloromethane		1,4-Dichlorobutane	
1,1,2-Trichloroethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>WAGGENT BUNK</u>				
CLIENT NAME _____				
SAMPLE ID _____				
EPA METHOD 601		EPA METHOD 602		
DATE: <u>8/25/26</u>		DATE: _____		
ANALYST: <u>C</u>		ANALYST: _____		
INSTRUMENT: <u>GC/MS</u>		INSTRUMENT: _____		
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)	
Chloromethane	<u>ND</u>	Benzene		
Bromomethane		Toluene		
Vinyl Chloride		Ethyl benzene		
Chloroethane		Chlorobenzene		
Methylene chloride		1,4-Dichlorobenzene		
Trichlorofluoromethane		1,3-Dichlorobenzene		
1,1-Dichloroethene		1,2-Dichlorobenzene		
1,1-Dichloroethane		P-Xylene		
Trans-1,2-Dichloroethene		M-Xylene		
Chloroform		O-Xylene		
1,2-Dichloroethane		SURROGATE RECOVERIES:	601	
1,1,1-Trichloroethane			Bromochloromethane	
Carbon tetrachloride			2-Bromo-1-Chloropropane	
Bromodichloromethane			1,4-Dichlorobutane	
1,2-Dichloropropane			602	
Trans-1,3-Dichloropropene			a,a,a,-Trifluorotoluene	
Trichloroethene				
Dibromochloromethane				
1,1,2-Trichloroethane				
cis-1,3-Dichloropropene				
2-Chloroethylvinyl ether				
Bromoform				
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene				
Chlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				

VOA RESULTS

LAB # <u>SYSTE BANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
-----		-----	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/22/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>all</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>N/D</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	_____
Dibromochloromethane		2-Bromo-1-Chloropropane	_____
1,1,2-Trichloroethane		1,4-Dichlorobutane	_____
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	_____
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB #		REAGENT BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 8/20/96 ANALYST: C. [signature] INSTRUMENT: [signature]
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	7/22/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				11.3	94
	1,2-Dichloroethane	27.6				1.0	50
	1,1,1-Trichloroethane	14.3				1.8	128
	Carbon Tetrachloride	20.0				2.6	100
	Bromodichloromethane	7.9				2.1	105
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2				2.8	95
	Dibromochloromethane	16.7				2.6	100
	Bromoform	9.9				2.1	71
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	27.0	88			
	Toluene	4.1	4.1	100			
	Ethylbenzene	11.5	9.0	78			
	P-Xylene	19.1	19.6	103			
	M-Xylene	42.6	40.0	94			
	O-Xylene	10.6	10.7	101			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

9 Poor INTEGRATION

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8/25/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	42.0 12.0				13.1	109
	1,2-Dichloroethane	27.5 2.0				1.1	55
	1,1,1-Trichloroethane	14.3 1.4				1.7	119
	Carbon Tetrachloride	20.0 2.6				2.6	100
	Bromodichloromethane	7.9 2.0				2.3	115
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2 2.9				2.8	95
	Dibromochloromethane	10.7 2.6				3.1	117
	Bromoform	2.9 2.9				2.3	80
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2 1.6				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	25.9	84			
	Toluene	4.1	3.9	96			
	Ethylbenzene	11.5	8.9	77			
	P-Xylene	19.1	19.4	102			
	M-Xylene	42.6	39.3	92			
	O-Xylene	10.6	10.5	99			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

By Person INTEGRATION

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	9/2/74	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	42.0 12.0	10.7	89			
	1,2-Dichloroethane	27.0 2.0	1.1	55			
	1,1,1-Trichloroethane	14.3 1.4	1.7	121			
	Carbon Tetrachloride	20.0 2.6	2.7	104			
	Bromodichloromethane	7.9 2.0	2.4	121			
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2 2.5	2.8	95			
	Dibromochloromethane	16.7 2.6	2.5	94			
	Bromoform	2.9 2.9	2.3	79			
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	8.2 1.6	1.4	87			
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7				28.7	93
	Toluene	4.1				4.1	100
	Ethylbenzene	11.5				9.0	78
	P-Xylene	13.1				19.9	104
	M-Xylene	42.6				40.8	96
	O-Xylene	10.6				10.8	102
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

P20A INSTRUMENT

RADIAN
CORPORATION

field blank
860250-255 : 0+6, 11C Fuels, 604, 602

dup. — 860254
860253
860257
860255
860252
860250

CHAIN OF CUSTODY RECORD

Field Sample No. 860250

Company Sampled/Address Plant 4

Sample Point Description Surface water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Gary Henderson Date/Time Sampled 8/20/84

Amount of Sample Collected 22 Vials, 12 mason jars

Sample Description Surface water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 860250, 253, 257

Comments _____

Inclusive Dates of Possession 8/20 - 8/21/84

Organization Name RAS

Received By Mike Lindsey Date Received 5-22-86 Time 0830

Transported By WJ Lab Sample No. 4608092, 093, 094

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 8/24/76 ANALYST: C INSTRUMENT: Minuman	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	N2	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichloroethene</u>		1,2-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>		SURROGATE RECOVERIES:	
<u>1,2-Dichloropropane</u>		601	
<u>Trans-1,3-Dichloropropene</u>		Bromochloromethane	
<u>Trichloroethene</u>		2-Bromo-1-Chloropropane	
<u>Dibromochloromethane</u>		1,4-Dichlorobutane	
<u>1,1,2-Trichlorethane</u>		602	
<u>cis-1,3-Dichloropropene</u>		a,a,a,-Trifluorotoluene	
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>URGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/26/82</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N7</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethane		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane _____	
Dibromochloromethane		2-Bromo-1-Chloropropane _____	
1,1,2-Trichloroethane		1,4-Dichlorobutane _____	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether	a,a,a,-Trifluorotoluene _____		
Bromoform			
1,1,1,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>5457a GCANL</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/25/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>QO</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 8/25/86 ANALYST: CP INSTRUMENT: QM
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	N/A
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SYSTEM Bunk</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/25/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	<u>AD</u>	<u>Benzene</u>	
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichloroethene</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichloroethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichloromethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		<u>Bromochloromethane</u>	
<u>Dibromochloromethane</u>		<u>2-Bromo-1-Chloropropane</u>	
<u>1,1,2-Trichloroethane</u>		<u>1,4-Dichlorobutane</u>	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		<u>a,a,a,-Trifluorotoluene</u>	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachloroethane</u>			
<u>Tetrachloroethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>REAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>8/25/86</u>		DATE: _____	
ANALYST: <u>C</u>		ANALYST: _____	
INSTRUMENT: <u>Shimadzu</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>ND</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #	
CLIENT NAME	
SAMPLE ID	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)
Chloromethane	Benzene
Bromomethane	Toluene
Vinyl Chloride	Ethyl benzene
Chloroethane	Chlorobenzene
Methylene chloride	1,4-Dichlorobenzene
Trichlorofluoromethane	1,3-Dichlorobenzene
1,1-Dichlorethane	1,2-Dichlorobenzene
1,1-Dichlorethane	P-Xylene
Trans-1,2-Dichloroethene	M-Xylene
Chloroform	O-Xylene
1,2-Dichlorethane	
1,1,1-Trichlorethane	
Carbon tetrachloride	
Bromodichlormethane	
1,2-Dichloropropane	
Trans-1,3-Dichloropropene	
Trichloroethene	
Dibromochloromethane	
1,1,2-Trichlorethane	
cis-1,3-Dichloropropene	
2-Chloroethylvinyl ether	
Bromoform	
1,1,2,2-Tetrachlorethane	
Tetrachlorethylenes	
Chlorobenzene	
1,3-Dichlorobenzene	
1,2-Dichlorobenzene	
1,4-Dichlorobenzene	

VOA RESULTS

LAB # <u>REGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/20/96</u> ANALYST: <u>CJL</u> INSTRUMENT: <u>Q</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	7/22/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				11.3	94
	1,2-Dichloroethane	27.6				1.0	50
	1,1,1-Trichloroethane	14.3				1.8	128
	Carbon Tetrachloride	20.0				2.6	100
	Bromodichloromethane	7.9				2.1	105
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2				2.8	95
	Dibromochloromethane	16.7				2.6	100
	Bromoform	9.9				2.1	71
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	27.0	88			
	Toluene	4.1	4.1	100			
	Ethylbenzene	11.5	9.0	78			
	P-Xylene	19.1	19.6	103			
	M-Xylene	42.6	40.0	94			
	O-Xylene	10.6	10.7	101			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

P Peak INTEGRATION

6 443

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8/25/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	42.0 ^{12.0}				13.1	109
	1,2-Dichloroethane	27.5 ^{2.0}				1.1	55 ⁰
	1,1,1-Trichloroethane	14.3 ^{1.4}				1.7	119
	Carbon Tetrachloride	20.0 ^{2.6}				2.6	100
	Bromodichloromethane	7.9 ^{2.0}				2.3	115
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2 ^{2.9}				2.8	95
	Dibromochloromethane	10.7 ^{2.6}				3.1	147
	Bromoform	2.9 ^{2.9}				2.3	80
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2 ^{1.6}				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	25.9	84			
	Toluene	4.1	3.9	96			
	Ethylbenzene	11.5	8.9	77			
	P-Xylene	19.1	19.4	102			
	M-Xylene	42.6	39.3	92			
	O-Xylene	10.6	10.5	99			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

Ⓟ Peak Integration

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	9/2/74	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	4.0 12.0	10.7	89			
	1,2-Dichloroethane	27.0 2.0	1.1	55			
	1,1,1-Trichloroethane	14.5 1.4	1.7	121			
	Carbon Tetrachloride	20.0 2.6	2.7	104			
	Bromodichloromethane	7.9 2.0	2.4	121			
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2 2.5	2.8	95			
	Dibromochloromethane	16.7 2.6	2.5	94			
	Bromoform	2.9 2.9	2.3	79			
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2 1.6	1.4	87			
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7				28.7	93
	Toluene	4.1				4.1	100
	Ethylbenzene	11.5				9.0	78
	P-Xylene	19.1				19.9	104
	M-Xylene	42.6				40.8	96
	O-Xylene	10.6				10.8	102
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

POP INTEGRATION

Yount 4 8102-15

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8-29-86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	Chloroform	12.0					
	1,2-Dichloroethane	2.0					
	1,1,1-Trichloroethane	1.4					
	Carbon Tetrachloride	2.6					
	Bromodichloromethane	2.0					
	Trichloroethene	2.9					
	Dibromochloromethane	2.6					
	Bromoform	2.9					
	Tetrachloroethene	1.6					
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	25.8	84			
	Toluene	4.1	3.8	92			
	Ethylbenzene	11.5	8.4	73			
	P-Xylene	19.1	13.8	72			
	M-Xylene	42.6	33.4	78			
	O-Xylene	10.6	10.2	96			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8-27-84	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	Chloroform	12.0	11.9	99			
	1,2-Dichloroethane	2.0	1.1	55%			
	1,1,1-Trichloroethane	1.4	1.7	113			
	Carbon Tetrachloride	2.6	2.7	104			
	Bromodichloromethane	2.0	2.0	100			
	Trichloroethene	2.9	2.9	100			
	Dibromochloromethane	2.6	2.7	102			
	Bromoform	2.9	3.2	76			
	Tetrachloroethene	1.6	1.5	93			
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7				26.1	85
	Toluene	4.1				4.1	100
	Ethylbenzene	11.5				8.8	77
	P-Xylene	19.1				19.1	100
	M-Xylene	42.6				38.7	91
	O-Xylene	10.6				10.3	97
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

⊗ poor integration

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8-26-86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery	Analyzed Value	% Recovery
	INSTRUMENT		G	G	D	D
TEST METHOD	COMPOUND					
EPA 601	EPA WP 483 CONC. 2					
	Chloroform	12.0	10.7	89		
	1,2-Dichloroethane	2.0	1.1	55		
	1,1,1-Trichloroethane	1.4	1.7	121		
	Carbon Tetrachloride	2.6	2.7	104		
	Bromodichloromethane	2.0	2.4	121		
	Trichloroethene	2.9	2.8	95		
	Dibromochloromethane	2.6	2.5	94		
	Bromoform	2.9	2.3	97		
	Tetrachloroethene	1.6	1.4	87		
EPA 602	EPA - WP 879 CONC.1					
	Benzene	30.7			28.7	93
	Toluene	4.1			4.1	100
	Ethylbenzene	11.5			9.0	78
	P-Xylene	19.1			19.9	104
	M-Xylene	42.6			40.3	96
	O-Xylene	10.6			11.3	102
EPA 608		(ug/g)				
	Aroclor 1242	58.7				
	Aroclor 1260	56.8				

⊗ poor integration

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8-25-86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	Chloroform	12.0				13.1	109
	1,2-Dichloroethane	2.0				1.1	55*
	1,1,1-Trichloroethane	1.4				1.7	119
	Carbon Tetrachloride	2.6				2.6	100
	Bromodichloromethane	2.0				2.3	115
	Trichloroethene	2.9				2.8	95
	Dibromochloromethane	2.6				3.1	117
	Bromoform	2.9				2.3	80
	Tetrachloroethene	1.6				1.4	86
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	25.9	84			
	Toluene	4.1	3.9	96			
	Ethylbenzene	11.5	8.9	77			
	P-Xylene	19.1	19.4	102			
	M-Xylene	42.6	39.3	92			
	O-Xylene	10.6	10.5	99			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

* poor integration

VOA RESULTS

LAB # <u>System Blank</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/29/84</u> ANALYST: <u>C</u> INSTRUMENT: <u>Relia</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		<u>Benzene</u>	
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichlorethene</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		<u>Bromochloromethane</u>	
<u>Dibromochloromethane</u>		<u>2-Bromo-1-Chloropropane</u>	
<u>1,1,2-Trichlorethane</u>		<u>1,4-Dichlorobutane</u>	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		<u>a,a,a,-Trifluorotoluene</u>	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylen</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # _____		CLIENT NAME _____	
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 8/21/76 ANALYST: RP INSTRUMENT: QM
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601 Bromochloromethane _____
 2-Bromo-1-Chloropropane _____
 1,4-Dichlorobutane _____

602 a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB #		<u>SYSTON BLANK</u>	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/27/96</u> ANALYST: <u>C</u> INSTRUMENT: <u>Humil</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	N _D	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>			
<u>Trans-1,3-Dichloropropene</u>			
<u>Trichloroethene</u>			
<u>Dibromochloromethane</u>			
<u>1,1,2-Trichlorethane</u>			
<u>cis-1,3-Dichloropropene</u>			
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylenes</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>REGENT Bank</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>7/27/86</u> ANALYST: <u>G</u> INSTRUMENT: <u>Hunter</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	<u>N₂</u>	<u>Benzene</u>	
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		<u>Bromochloromethane</u>	
<u>Dibromochloromethane</u>		<u>2-Bromo-1-Chloropropane</u>	
<u>1,1,2-Trichlorethane</u>		<u>1,4-Dichlorobutane</u>	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		<u>a,a,a,-Trifluorotoluene</u>	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # _____ SYSTEM BUNK			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: 7/26/86 ANALYST: C INSTRUMENT: Germain		DATE: ANALYST: INSTRUMENT:	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>16867 BUNK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>8/26/76</u>		DATE: _____	
ANALYST: <u>C</u>		ANALYST: _____	
INSTRUMENT: <u>4400</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

[illegible]

VOA RESULTS

LAB # _____		URGENT BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 8/25/86 ANALYST: C INSTRUMENT: Qel
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>		<u>Benzene</u>	ND
<u>Bromomethane</u>		<u>Toluene</u>	
<u>Vinyl Chloride</u>		<u>Ethyl benzene</u>	
<u>Chloroethane</u>		<u>Chlorobenzene</u>	
<u>Methylene chloride</u>		<u>1,4-Dichlorobenzene</u>	
<u>Trichlorofluoromethane</u>		<u>1,3-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>1,2-Dichlorobenzene</u>	
<u>1,1-Dichlorethane</u>		<u>P-Xylene</u>	
<u>Trans-1,2-Dichloroethene</u>		<u>M-Xylene</u>	
<u>Chloroform</u>		<u>O-Xylene</u>	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	_____
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	_____
<u>1,1,2-Trichlorethane</u>		1,4-Dichlorobutane	_____
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	_____
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

RADIAN
CORPORATION

860237 - 1/11C Fluids, OTC

860238 - 1/11C Fluids, OTC

860245 - 1/11C Fluids, OTC

860238
Collected 860237
8/20/86 860245

8/21/86 860261
860260

Field Sample No. 860260

860260 - 2.1L, RAM

CHAIN OF CUSTODY RECORD

860261 - 601602, 625, Mettles.

HC Fluids, OTC, RAM

2 trip blanks

Company Sampled/Address Plant 4

Sample Point Description Groundwater

Stream Characteristics:

Temperature _____

Flow _____

pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson

Date/Time Sampled 8/20 - 8/21/86

Amount of Sample Collected 6 mason, 4.1L plastic, 1.1L glass, 6 VOA's

Sample Description Groundwater

Store at: ☐ Ambient

☐ 5°C

☐ -10°C

☒ Other 4°C

☒ Caution - No more sample available

☐ Return unused portion of sample

☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____

Date Received _____

Time _____

Transported By Wendy Johnson

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 8/20 - 8/21/86

Organization Name RAS

Received By Joe Zimber

Date Received 8/22/86

Time 0830

Transported By _____

Lab Sample No. 8608093, 094, 095

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



860257. 601, 602, 625, Metals, Org, H.F., H.A., H.S., R.H.
860258 601, 602, 625, Metals, Org, H.F., H.A., H.S., R.H.
860259 " " " " " " " "

CHAIN OF CUSTODY RECORD

860258
860259

Field Sample No. _____

Company Sampled/Address Plant 4

Sample Point Description ground water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 8/21/86 / 8:15

Amount of Sample Collected 4 mason 3-1 L plastic, 3 500ml plastic, 4 1 L glass, 12 VOA

Sample Description ground water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. _____

Comments _____

Inclusive Dates of Possession 8/21/86

Organization Name MS

Received By Mike Timney Date Received 9/22/86 Time 0830

Transported By WJ Lab Sample No. 3608093, 095

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

#8608093

field blanks

dup. - 860254

RADIAN
CORPORATION

860250-255: 0.6, 11C Fuel, 604, 602

860253

860257

860255

860252

860250

CHAIN OF CUSTODY RECORD

Field Sample No.

Company Sampled/Address

Plant 4

Sample Point Description

Surface water

Stream Characteristics:

Temperature

Flow

pH

Visual Observations/Comments

Collector's Name

Gary Henderson

Date/Time Sampled

8/20/84

Amount of Sample Collected

22 Vials, 12 Mason jars

Sample Description

Surface water

Store at:

☐ Ambient☐ 5°C☐ -10°C☒ Other

4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

☒ Hazardous sample (see below)☐ Non-hazardous sample☒ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☒ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name

Radian Corp

Received By

Date Received

Time

Transported By

Wendy Johnson

Lab Sample No.

Comments

Inclusive Dates of Possession

8/20 - 8/21/84

Organization Name

RAS

Received By

Jill Timoney

Date Received

8-22-86

Time

0830

Transported By

WD

Lab Sample No.

8608092, 093, 094

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession



860247-350 HC Fuel
Oil + Grease

86-08-094

860247
860248
860249

CHAIN OF CUSTODY RECORD

Field Sample No. 860350

Company Sampled/Address AE Plant 4

Sample Point Description outfall #1

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Gary Henderson Date/Time Sampled _____

Amount of Sample Collected 8 mason jars

Sample Description Surface water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☒ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Gary Henderson Lab Sample No. 86-08-94

Comments _____

Inclusive Dates of Possession 8/20/86

Organization Name _____

Received By DL Date Received 8-20-86 Time 9:30

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

RADIAN
CORPORATION

field blanks dup. — 860754
860750-755: 0+6, HCFuels, 604, 602

860753
860757
860755
860752
860750

CHAIN OF CUSTODY RECORD

Field Sample No. 860750

Company Sampled/Address Plant 4

Sample Point Description Surface water

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Gary Henderson Date/Time Sampled 8/20/84

Amount of Sample Collected 22 Vials, 12 Mason jars

Sample Description Surface Water

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Radian Corp

Received By _____ Date Received _____ Time _____

Transported By Windy Johnson Lab Sample No. 8608092, 093, 094

Comments _____

Inclusive Dates of Possession 8/20 - 8/21/84

Organization Name RAS

Received By John Ramsey Date Received 8-22-86 Time 0830

Transported By WJ Lab Sample No. 8608092, 093, 094

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 8/24/76 ANALYST: C INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	N/D	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichloroethene</u>		1,2-Dichlorobenzene	
<u>1,1-Dichloroethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichloroethane</u>			
<u>1,1,1-Trichloroethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>			
<u>1,2-Dichloropropane</u>		SURROGATE RECOVERIES:	
<u>Trans-1,3-Dichloropropene</u>		601	
<u>Trichloroethene</u>		Bromochloromethane	
<u>Dibromochloromethane</u>		2-Bromo-1-Chloropropane	
<u>1,1,2-Trichloroethane</u>		1,4-Dichlorobutane	
<u>cis-1,3-Dichloropropene</u>		602	
<u>2-Chloroethylvinyl ether</u>		a,a,a,-Trifluorotoluene	
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

VOA RESULTS

LAB # <u>URGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/26/82</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethane		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane		SURROGATE RECOVERIES:	
1,2-Dichloropropane		601	
Trans-1,3-Dichloropropene		Bromochloromethane _____	
Trichloroethene		2-Bromo-1-Chloropropane _____	
Dibromochloromethane		1,4-Dichlorobutane _____	
1,1,2-Trichlorethane		602	
cis-1,3-Dichloropropene		a,a,a,-Trifluorotoluene _____	
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>5757-06</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/25/86</u> ANALYST: <u>CY</u> INSTRUMENT: <u>QO</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>REAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/25/86</u> ANALYST: <u>CP</u> INSTRUMENT: <u>Q</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane _____

2-Bromo-1-Chloropropane _____

1,4-Dichlorobutane _____

602

a,a,a,-Trifluorotoluene _____

VOA RESULTS

LAB # <u>SYS-200 Bunk</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: <u>8/25/96</u> ANALYST: <u>C</u> INSTRUMENT: <u>Hewlett</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>WAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: <u>8/25/86</u> ANALYST: <u>C</u> INSTRUMENT: <u>Mermin</u>	EPA METHOD 602	DATE: _____ ANALYST: _____ INSTRUMENT: _____
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		<p>SURROGATE RECOVERIES:</p> <p>601</p> <p>Bromochloromethane _____</p> <p>2-Bromo-1-Chloropropane _____</p> <p>1,4-Dichlorobutane _____</p> <p>602</p> <p>a,a,a,-Trifluorotoluene _____</p>	
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>545708 BURL</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>8/22/86</u> ANALYST: <u>CJ</u> INSTRUMENT: <u>Shimadzu</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<u>ND</u>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichlorethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>REAGENT BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 8/22/66 ANALYST: C. J. [Signature] INSTRUMENT: [Signature]
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	No
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		SURROGATE RECOVERIES: 601 Bromochloromethane _____ 2-Bromo-1-Chloropropane _____ 1,4-Dichlorobutane _____ 602 a,a,a,-Trifluorotoluene _____	
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	7/22/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				11.3	94
	1,2-Dichloroethane	27.6				1.0	50
	1,1,1-Trichloroethane	14.3				1.8	128
	Carbon Tetrachloride	20.0				2.6	100
	Bromodichloromethane	7.9				2.1	105
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2				2.8	95
	Dibromochloromethane	16.7				2.6	100
	Bromoform	9.9				2.1	71
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	27.0	88			
	Toluene	4.1	4.1	100			
	Ethylbenzene	11.5	9.0	78			
	P-Xylene	19.1	19.6	103			
	M-Xylene	42.6	40.0	94			
	O-Xylene	10.6	10.7	101			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

9 PPM INTEGRATION

6 471

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	8/25/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	42.0 12.0				13.1	109
	1,2-Dichloroethane	27.6 2.0				1.1	55
	1,1,1-Trichloroethane	14.3 1.4				1.7	119
	Carbon Tetrachloride	20.0 2.6				2.6	100
	Bromodichloromethane	7.9 2.0				2.3	115
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2 2.9				2.8	95
	Dibromochloromethane	16.7 2.6				3.1	117
	Bromoform	8.9 2.9				2.3	80
	1,1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2 1.6				1.4	86
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	25.9	84			
	Toluene	4.1	3.9	96			
	Ethylbenzene	11.5	8.9	77			
	P-Xylene	19.1	19.4	102			
	M-Xylene	42.6	39.3	92			
	O-Xylene	10.6	10.5	99			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

Don INTEGRATION

DAILY QUALITY CONTROL
RAS GC LAB

DATE:	9/2/84	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G		D	D
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2 AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	4.0 12.0	10.7	89			
	1,2-Dichloroethane	27.0 2.0	1.1	55%			
	1,1,1-Trichloroethane	14.5 1.4	1.7	121			
	Carbon Tetrachloride	20.0 2.6	2.7	104			
	Bromodichloromethane	7.9 2.0	2.4	121			
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.0 2.9	2.8	95			
	Dibromochloromethane	16.7 2.6	2.5	94			
	Bromoform	2.0 2.9	2.3	79			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.7 1.6	1.4	87			
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7				28.7	93
	Toluene	4.1				4.1	100
	Ethylbenzene	11.5				9.0	78
	P-Xylene	19.1				19.9	104
	M-Xylene	42.6				40.8	96
	O-Xylene	10.6				10.8	102
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

P200 INTEGRATION

6 473

Form 11

Submitted 9-10-86

Units µg/ml[illegible]

1. Control Limits for PR: ICPES _____
AA F _____

Form III

Compiled 9-10-86
Submitted 9-10-86
Matrix agreed

Units µg/ml

1. IDL = Instrument Detection Limit
* Indicates value is less than 5X the IDL.

NO-A190 446

INSTALLATION RESTORATION PROGRAM PHASE 2
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP
AUSTIN TX DEC 87 F33615-83-D-4001

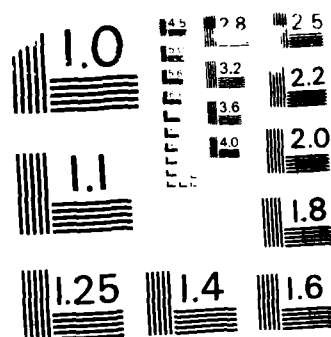
2/8

UNCLASSIFIED

F/G 24/7

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Form V

Workorder 36-C8-095

Submitted 9-10-86

Matrix aqueous

Spiking method analyticalUnits µg/ml6 477

Form V

Workorder 86-08-095

Submitted _____

Matrix aqueous

Spiking method pre-digestionUnits ug/ml

6 478

Form VI

Workorder 816-08-095

Submitted _____

Matrix aqueous

Type analytical

Units µg/ml

* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. RPD=Relative percent difference= $[|S-D|/((S+D)/2)] \times 100$.
2. NC₁=Not calculable due to a value less than 5X the IDL.
NC=Not calculable due to a value less than the CRDL. (Contract Required Detection Limit)
^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

Form VI

Workorder 86-08-095

Submitted _____

Matrix aqueous

Type digestion

Units µg/ml

* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. RPD=Relative percent difference= $\left[\frac{|S-D|}{((S+D)/2)} \right] \times 100$.
2. NC₁=Not calculable due to a value less than 5X the IDL.
NC=Not calculable due to a value less than the CRDL. (Contract Required Detection Limit)
^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

Workorder 36-08-095

Client

PLANT 4

Units

[illegible]

$$RPD = [(S-D) / ((S+D)/2)] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

NC1 = Noncalculable due to values
<5x's the IDL

$$\text{SPIKE \%R} = \left[(\text{SSR-SR}) / \text{SA} \right] \times 100$$

* = Value is less than five times the instrument detection limit

IDL = Instrument Detection Limit

A = Analytical

P = Predigestion



560257 314 11/11/11, 11/11/11
560258 11/11/11, 11/11/11
560259 11/11/11, 11/11/11

560258 11/11/11
560259 11/11/11
560260 11/11/11

560260 2 11/11/11
2 11/11/11
plastic 560261 - 11/11/11, 11/11/11
11/11/11, 11/11/11

CHAIN OF CUSTODY RECORD

Field Sample No. 1

Company Sampled/Address Plastic 14

Sample Point Description plastic 14

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 8/20 - 8/21/11

Amount of Sample Collected 6 masin, 4 11 plastic, 1 11 glass, 6 VHS

Sample Description plastic 14

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Plastic 14

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 86-09-091

Comments _____

Inclusive Dates of Possession 8/20 - 8/21/11

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



560261 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

CHAIN OF CUSTODY RECORD

Field Sample No. 560261

Company Sampled/Address Am. Forces Plant 4

Sample Point Description groundwater

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name Wendy Johnson Date/Time Sampled 5/27/52 1200

Amount of Sample Collected 2 muslin jars, 2 1 qt plastic, 1 500 ml plastic, 1 1000 ml plastic

Sample Description groundwater 4 vials

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☒ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☒ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name Buckley Corp

Received By _____ Date Received _____ Time _____

Transported By Wendy Johnson Lab Sample No. 86-09-096

Comments _____

Inclusive Dates of Possession 5/27/52

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Gross Alpha/Gross Beta
Analysis

Sample I.D.-----BLANK DIW

Contract Name-----RAS- PLANT 4

Sample Size----- 0.5000 (3) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.1736

filter/planchet+sample 7.1738

sample weight----- 0.25 (P) mg

Original, Solid or Liquid:
for solid:1, for liq:2-- 2.00 (2)

Areal Density
P/10.18(s) or P/19.63(l) 0.01 (A) mg/cm²

Sample Count Time:
in Hours----- 1.67 (T)

Background Count Time:
in Hours----- 10.00 (TB)

Self Absorption Factor:		Self Absorption Factor	
Alpha Count-----	0.86 (WA)	Beta Counts-----	0.91 (WB)

Instrument Constant		Instrument Constant	
Alpha-----	0.02 (FA)	Beta-----	0.02 (FB)

Total Counts:		Total Counts:	
Alpha-----	7.00 (CA)	Beta-----	75 (CB)

Background Counts:		Background Counts:	
Alpha-----	36.00 (BA)	Beta-----	551.00 (BB)

Calculated Net Rate:		Calculated Net Rate:	
Alpha (pCi/L)-----	0.03 (DA)	Beta (pCi/L)-----	0.44 (DB)

Deviation:		Deviation:	
Alpha (pCi/L)-----	0.27	Beta (pCi/L)-----	0.44

Quantification Limit:		Quantification Limit:	
Alpha (pCi/L)-----	0.78	Beta (pCi/L)-----	0.16

Final Results: Note - Calculated Rate is below Detection Limit

Alpha (pCi/L)-----	0.4	Beta (pCi/L)-----	0.7
--------------------	-----	-------------------	-----

Gross Alpha/Gross Beta
Analysis

Sample I.D.-----DIW BLANK

Contract Name-----RAS- PLANT 4

Sample Size----- 0.5000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2457

filter/planchet+sample 7.2460

sample weight----- 0.29 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (2)

Areal Density

P/10.18(s) or P/19.63(l) 0.01 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 7.00 (CA)

Background Counts:

Alpha----- 43.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- -0.01 (DA)

Deviation:

Alpha (pCi/L)----- 0.29

Quantification Limit:

Alpha (pCi/L)----- 0.82

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 104 (CB)

Background Counts:

Beta----- 507.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 0.51 (DB)

Deviation:

Beta (pCi/L)----- 0.46

Quantification Limit:

Beta (pCi/L)----- 1.62

Final Results: Note - Calculated Rate is below Detection Limit

Alpha (pCi/L)----- < (0.4) Beta (pCi/L)----- < (0.7)

Gross Alpha/Gross Beta
Analysis

Sample I.D.-----MIXED SR-90 .5ML AND AM-241 100L

Contract Name-----RAS- PLANT 4

Sample Size----- 1.0000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2023

filter/planchet+sample 7.2024

sample weight----- 0.09 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (?)

Areal Density

P/10.18(s) or P/19.63(l) 0.00 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 160.00 (CA)

Background Counts:

Alpha----- 47.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 2.40 (DA)

Deviation:

Alpha (pCi/L)----- 0.29

Quantification Limit:

Alpha (pCi/L)----- 0.42

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 819 (CB)

Background Counts:

Beta----- 521.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 9.56 (DB)

Deviation:

Beta (pCi/L)----- 0.51

Quantification Limit:

Beta (pCi/L)----- 0.82

Final Results:

Alpha (pCi/L)----- 2.40 (0.3)

Beta (pCi/L)----- 9.56 (0.5)

Gross Alpha, Gross Beta
Analysis

Sample I.D.-----SR-90 STD 0.5ML

Contract Name-----RAS- PLANT 4

Sample Size----- 1.0000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2019

filter/planchet+sample 7.2019

sample weight----- 0.04 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (C)

Areal Density

P/10.18(s) or P/19.63(l) 0.00 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 6.00 (CA)

Background Counts:

Alpha----- 47.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- -0.03 (DA)

Deviation:

Alpha (pCi/L)----- 0.15

Quantification Limit:

Alpha (pCi/L)----- 0.42

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 664 (CB)

Background Counts:

Beta----- 521.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 7.53 (DB)

Deviation:

Beta (pCi/L)----- 0.48

Quantification Limit:

Beta (pCi/L)----- 1.82

Final Results: Note - Calculated Rate is below Detection Limit

Alpha (pCi/L)----- < (0.3) Beta (pCi/L)----- 7.53 (0.5)

Gross Alpha/Gross Beta
Analysis

Sample I.D.-----AM-241 STD 100L

Contract Name-----RAS- PLANT 4

Sample Size----- 1.0000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2771

filter/planchet+sample 7.2772

sample weight----- 0.06 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (7)

Areal Density

P/10.18(s) or P/19.63(l) 0.00 (A) mg/cm2

Sample Count Time:

in Hours----- 1.87 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 158.00 (CA)

Background Counts:

Alpha----- 56.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 2.34 (DA)

Deviation:

Alpha (pCi/L)----- 0.30

Quantification Limit:

Alpha (pCi/L)----- 0.44

Self Absorption Factor

Beta Counts----- 0.61 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 154 (CB)

Background Counts:

Beta----- 575.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 0.75 (DB)

Deviation:

Beta (pCi/L)----- 0.27

Quantification Limit:

Beta (pCi/L)----- 0.95

Final Results:

Alpha (pCi/L)----- 2.34 (0.3)

Beta (pCi/L)----- 0.75 (0.3)

END

DATE

FILMED

4-88

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